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F. S. KENFIELD, Pres. F. P. KEENEY, Treas. and Gen. Mgr.
E. DE FOREST WINSLOW, Vice-Pres. O. T. CARSON, Secretary.

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MASTER PLUMBERS AND SUPPLY TRADE TO CO-OPERATE IN MOVEMENT TO RELIEVE DEPRESSION IN BUILDING.

REPRESENTATIVES of the organized master plumbers of the country and of the supply trade have recently held joint conferences in Chicago. More of these committee meetings will no doubt be held in the leading cities. The purpose of these conferences is essentially co-operative. Ways and means, relative to relieving the depression in the building trades, have been discussed, and the principal remedies advocated are advertising and salesmanship.

It is recommended that property owners should remodel old buildings, particularly plumbing, at this time rather than postpone the needed alterations until after the war, when the possibiliy of a great increase in building construction may bring a scarcity of skilled labor in repair and overhauling activity. The slogan, "Do Your Remodeling Now," is therefore in order.

Considering the fact that Secretary McAdoo advises the American people to defer new building and thus conserve material and labor for war purposes, Captain A. M. Maddock, president of the Thomas Maddock's Sons Co., Trenton, N. J., presented a suggestion at the recent meeting of the Eastern Supply Association, that the various branches of the plumbing industry should co-operate for the purpose of overcoming, as much as possible, the present depression in the building trade.

Speaking of what the plumber can do under the conditions that prevail at the present time, Captain Maddock said: "If there is a united co-operation on the part of manufacturers and jobbers, their salesmen and the plumbing trade, to put new plumbing into old buildings, a wonderful business can be developed. The plumber must do his part. I have found that the plumber, who is a good mechanic, has developed into a good merchant and has gone out to sell vacuum cleaners and other side lines. He has, however, not quite seen where he can do a great business by pushing for more plumbing work among the people who already own their homes. President L. McNamara, of the National Association of Master Plumbers, is in favor of conferences between manufacturers, jobbers and plumbers, to consider a co-operative movement. "It is time for us to do some co-operative advertising. Business cannot be secured by working on the old self-interest plan. We must work together. We must co-operate. Let us train salesmen to help in training the plumbers to sell to the people. There are excellent possibilities in a plan of national scope, if advertising is also taken into consideration."

There is good reason to believe that newspaper and window display advertising, supplemented by live salesmanship, will prove of great aid in creating new business for the master plumber.

As a concrete example of the value of these agencies, John F. Conran, of the Standard Sanitary Mfg. Co., points out the success that attended a co-operative movement between plumber and manufacturer in an Ohio town of 25,000 inhabitants: "We induced the plumbers to display a fine bathroom equipment in their show windows. We had the hardware stores show kitchen sinks and made a kitchen week in the town by advertising in the newspapers. Many people gave orders for kitchen sink equipment and then later put in bathrooms. We had two men make a house to house canvas, and a remarkable amount of information was brought in. About 325 prospects were secured, and a great deal of business was developed by this co-operative movement."

DOMESTIC HOT WATER CONNECTIONS

The Fifth of a Series of Articles, Which, When Completed, Should Help Plumbers to Solve all So-Called Range-Boiler and Hot Water Supply Problems

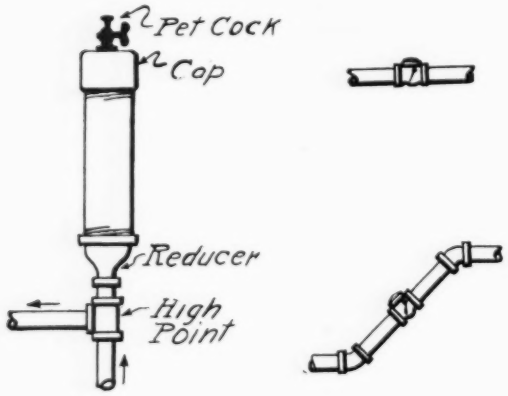
By Harold L. Alt

Continued from Page 311 in the March 2nd Issue.

Circulation Systems.

Many of us have stood with the hot water faucet turned on waiting patiently (?) for the cold water to run out and the flow of hot water to commence. Possibly an entire pail or more of cold water may have to be withdrawn in order to get a cupful of hot water necessary for shaving or other use. Such trouble is particularly aggravating on cold winter mornings, is wasteful of time and water, and is a well recognized distructor of tempers.

To avoid such a chronic disagreeable feature the circulating system has been developed, the idea being to arrange the hot water pipes in such a manner that the supply lines, instead of running to dead ends at the outlets, have a continuation made from this point back to



Figs. 49, 50 and 51.

the source of heating so that as the water in the line cools it will return to be re-heated, its place being taken by water of a higher temperature, thus keeping the supply line always hot.

In order to readily grasp the fundamental theory that governs this movement, it is necessary to consider what happens when the hot water passes out of the tank into the supply line. The hot water which has been heated in the water back passes into the storage tank and is there retained, until a hot water faucet is opened somewhere on the hot water line, at which time the hottest water in the top of the tank passes out into the supply line.

When the hot water outlet is closed off, the hot water in the pipe between the outlet and the tank lies there, and its heat is gradually lost through the radiation of the pipe. This radiation takes place at a slower rate, if the pipe is covered, than if it is not, but the water temperature eventually reaches the same degree—viz., that of the surrounding air. If, however, another outlet is opened before this low temperature is reached, then the partially cooled water is drawn off through the outlet and is replaced by hotter water from the tank; the more frequently the outlets are opened (i. e. the greater the quantity of hot water used), the less will be the temperature drop due to radiation losses, owing to the shorter length of time for the water to lie dead in the pipe.

From this it can be seen that the hot water line is largely similar to a hot water radiator, being supplied with hot water (heated at some other location) and radiating this heat out into the room. Every hot water heating man knows he cannot circulate hot water successfully, unless he has a return pipe back to his heater, and he also is familiar with the fact that his radiation in general must be above his heater to get a good circulation. Just so in a service system; there it is also necessary to have a return pipe and to have the radiating pipe located above the source of heat.

To make a hot water system circulate properly four essential features must be kept in mind. First, grade the pipes—both supply and return—continuously up toward the high point. Second, avoid all sags, pockets, etc. in which air can collect. Third, provide for the relief of air at the high point. Fourth, prevent the possibility of a reverse flow through the return line between the tank and any outlet.

Owing to the small height in which range boiler systems are usually operated the tendency to circulate (when the outlets are not in use) is very small. For this reason air collecting at any point in the supply or return line is a very troublesome feature and must be carefully guarded against. This can be accomplished by grading all lines continuously up to, or from, some high point, where the air can collect and from which it may be expelled through the outlet of some fixture or by some other means.

In a hot water *heating* system, where the same water is used over and over during the entire or a large portion of the heating season, it reaches a stage where its reheating does not result in its giving up any more air since the quantity of air that water can absorb is limited. Therefore, after this quantity of air has been given up no more can be released; but with hot water service systems the water is changed so rapidly that the new

incoming water is constantly releasing more air in the system and consequently air troubles are even more aggravated than in heating work. If it is possible to connect the high point of a hot water service system to a pipe leading to a fixture outlet, the air—naturally rising to the highest point—collects in the branch supply pipe and, when the fixture is used, is blown out through the hot water faucet, thus automatically relieving such air which otherwise would in time increase to such an extent as to stop the circulation. In some cases it may be found impossible to provide a fixture connection to serve as an air relief, in which contingency the only alternative is to provide an air trap, which is simply a small chamber, as shown in Fig. 49, made of pipe in which the air can collect instead of in the circulation line. In the top of the chamber is a pet cock for relieving the collected air from time to time, but, if such air is not relieved through the pet cock at proper intervals, it will fill the air chamber and then extend down into the circulation line, ultimately stopping the circulation just as effectually as though no air chamber were provided. Therefore, the air trap should be used only when absolutely necessary, as it depends on manual operation for its efficiency.

On the return line of any hot water service system a check valve should be used. This is owing to the fact that the circulation line provides two paths for the water to reach any outlet, which may be opened, one of these paths being through the supply line (which, of course, is the proper way) and the other through the return line (which is objectionable on account of cold water from the bottom of the tank coming through this line).

Such a flow, evidently, is likely to occur only when an outlet is opened, circulation going on as usual at all other times. As before mentioned the small vertical height, through which such sytems work, usually makes the circulating head very small, and for this reason the obstructing of the return by the insertion of a check valve will seriously retard the circulation, unless special means are provided to lessen the blocking effect of the tongue in the check.

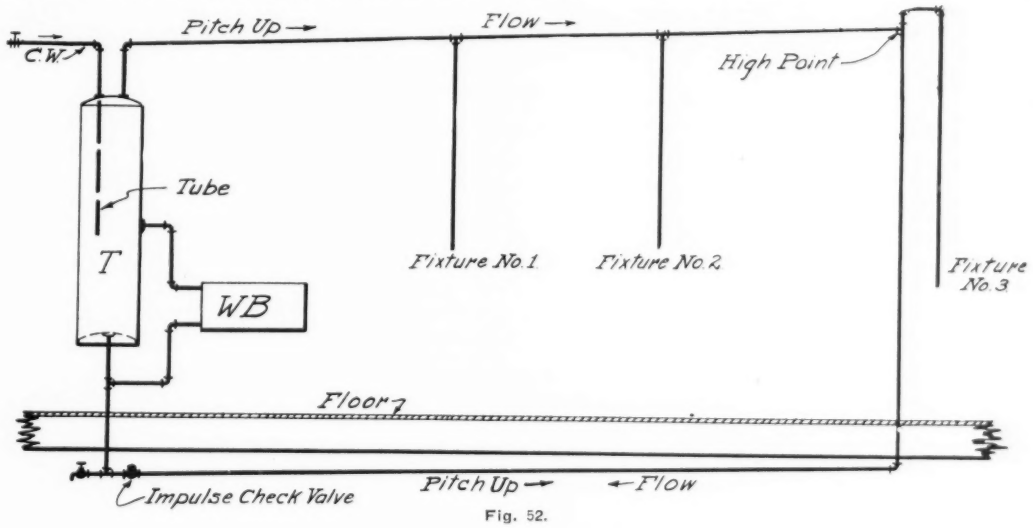


Fig. 52.

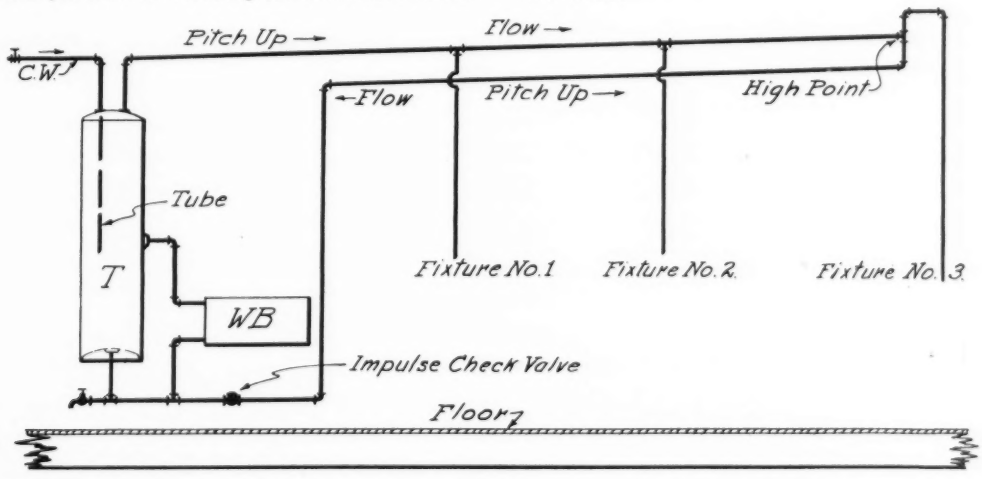


Fig. 53.

One of the simplest expedients is to use a special check valve—commonly called an "impulse" check—in which the tongue, instead of hanging on the common 45-degree angle, is hung on an angle of about 60-degree from the horizontal; the installation of such a valve is shown in Fig. 50. If an impulse valve is not procurable or if, for any other reason it is desired to use a common check, it may be installed on a 45-degree angle, as shown in Fig.

51; this causes the tongue to hang exactly vertical interposing very little resistance to the circulation but absolutely preventing a reverse flow. Another method sometimes used for a common check valve is to remove the regular tongue and to substitute an aluminum or thin brass flap in its place, thus reducing the weight of the tongue to a negligible amount.

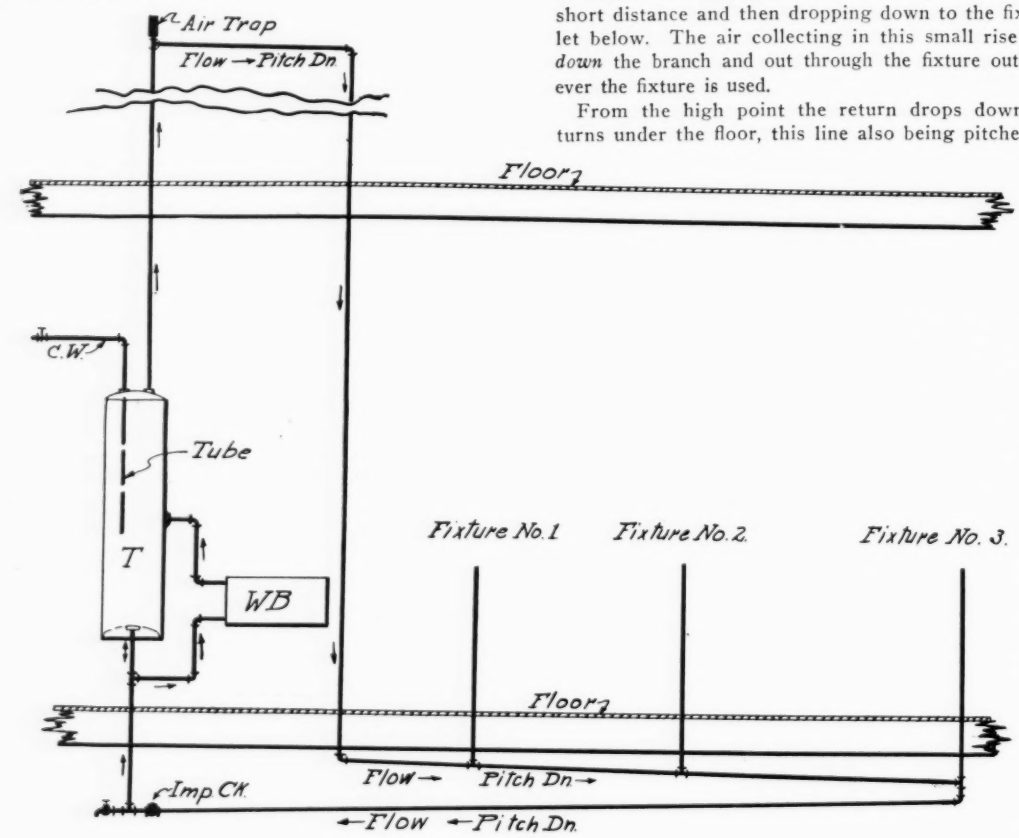


Fig. 54.

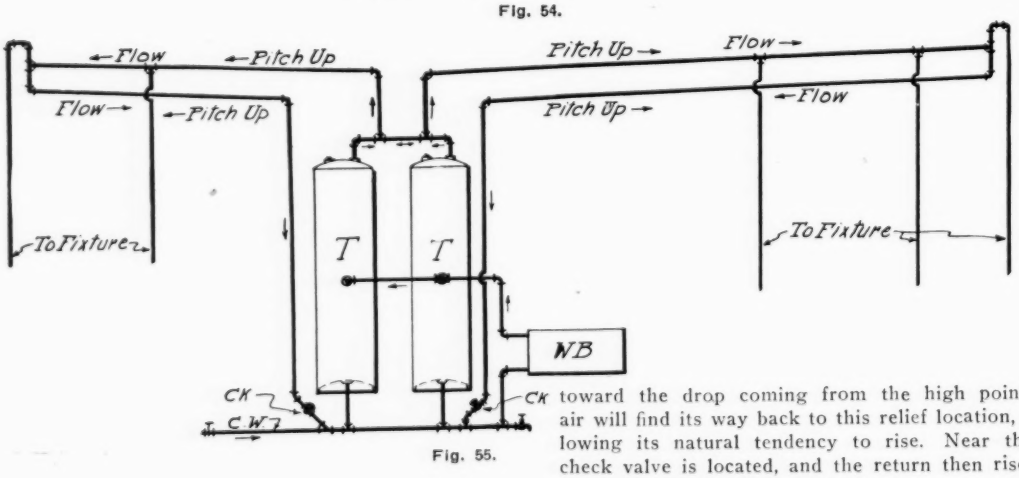


Fig. 55.

In range boiler circulating systems probably the most common combination is that of

One Tank and One Source—Fixtures on Same Level.

Under such conditions three solutions are possible these being

a. Supply on ceiling with return under floor.

b. Both supply and return on ceiling.

c. Both supply and return under floor.

Fig. 52 illustrates the most desirable way to circulate under these circumstances, the supply running on the ceiling and pitching upward continuously from the tank to the high point of the system. Here a fixture connection is taken off rising *upward* from the top of the line for a short distance and then dropping down to the fixture outlet below. The air collecting in this small rise is blown *down* the branch and out through the fixture outlet, whenever the fixture is used.

From the high point the return drops down and returns under the floor, this line also being pitched upward toward the drop coming from the high point so that air will find its way back to this relief location, when following its natural tendency to rise. Near the tank a check valve is located, and the return then rises up and connects into the bottom of the tank.

If it is impossible to place the return below the floor on account of the construction or the danger of freezing, it may be run back overhead paralleling the supply but below same so that the pitch downward from the high point will be continuous; this is illustrated in Fig. 53.

(Continued on Page 398.)

HEATING GREENHOUSES

Notes on the Planning and Installation of Efficient Heating Systems in Greenhouses

By Charles L. Hubbard

THE heating requirements of a greenhouse vary from those of a dwelling in three principal ways. First, the growing of different kinds of stock require wide differences in temperature, moisture and amount of ventilation; second, the maximum heating requirements occur at night instead of during the day; and third, the covering is almost entirely of glass, laid without putty along the horizontal laps, so that the amount of air leakage varies greatly in different cases.

Referring to the first condition, certain flowers like roses, require a comparatively high temperature, while others, like chrysanthemums, need an abundance of fresh outside air. In some cases the heat should be supplied beneath the soil, which is placed in "benches" raised above the floor, while in others the plants are grown in solid beds or directly in the ground, in which case the heat must be evenly distributed so as to warm the air of the building above the plants.

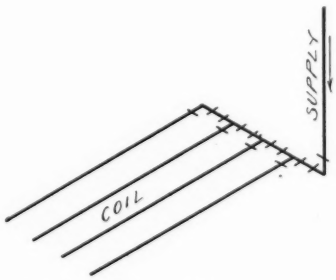


Fig. 1.—Method of Making Up Supply End of Horizontal Coil.

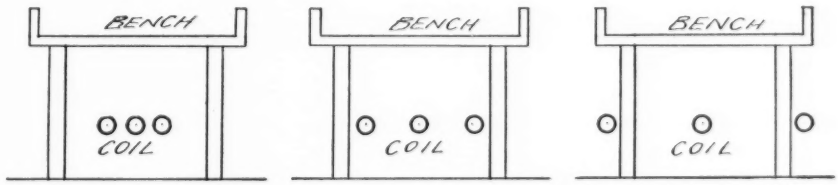


Fig. 2.—Arrangement of Coils under Benches.

In general, there will be more moisture than necessary, owing to the frequent watering and the resulting evaporation in the warm atmosphere of the building. This can only be relieved by the use of roof and wall ventilators for removing a portion of the warm moist air.

In this connection, drafts must be guarded against, which is best done by making up the ventilating sashes in comparatively short sections. It has been found by experience, that when the greater part of the heating surface is placed beneath the benches, local air currents are apt to be set up which tend to produce cold zones in different parts of the building. By the proper use of ventilators it is possible, under certain conditions, to relieve this somewhat, especially when accompanied by a manipulation of the heating coils at the same time. Unequal heat distribution is also affected by direction and strength of the wind, which also increases the difficulty of dealing with it properly.

Before laying out a heating system for a greenhouse the entire problem should be gone over in detail with the owner, in order to learn just what the requirements are to be in each section of the building, and the amount and arrangement of the heating surface made accordingly.

In case of a dwelling house the maximum heat is required during the day, when much of the time there is more or less heat obtained from the sun. At night the temperature may be allowed to drop considerably below the normal without discomfort to the occupants except on special occasions or during periods of sickness. A greenhouse, on the other hand, must be kept up to the normal temperature at night time as well as during the day. Mention has already been made of the excessive air leakage. This is due to the peculiar construction employed, the glass being set in sashes at the sides, while the horizontal points of the roof and sides are simply overlapped. As panes of glass never have perfectly straight edges, there is necessarily a good deal of leakage at these points; especially in windy weather.

The changes of air will vary from 1½ times per hour in the most carefully constructed building up to about four times in those of the older type and poor construction. In making computations for heat loss, when figuring the radiation, it is customary to assume a normal leakage of 2 to 2½ times per hour for buildings of good modern construction. A matter, which should be noted at this point, is the reduction in air leakage in very cold weather, due to the freezing of the excess moisture upon the inside of the glass which tends to seal the joints. On this account heating surfaces computed for zero weather, with normal leakage, will usually be found ample at 10 degrees below zero with ice upon the inside of the glass.

Computing Radiating Surface.

On account of the great variation in air leakage it is more difficult to compute the probable heat loss with any degree of accuracy than for a dwelling house, where the construction is more uniform.

In the following method it has been assumed that the heat loss through the glass construction with a normal inside temperature of 60 degrees, will be 1.5 B. t. u. per sq. ft. of surface, per hour, per degree difference in temperature between the two sides. The usual transmission factor is 1, and this has been increased 50 per cent to cover the effect of leakage. The maximum water temperature has been taken as 190 degrees with a fall to 170 degrees, or an average temperature of 180 degrees. The coil effi-

ciency has been taken as 2.2 B.t.u. per sq. ft. of surface, per hour, per degree difference between the coil and the surrounding air. With an inside temperature of 60 degrees, each sq. ft. of radiation, under these conditions, will give off $(180-60)\times 2.2=264$ B.t.u. per hour, and the heat loss per sq. ft. of glass surface will be $(60-0)\times 1.5=90$ B.t.u.

Therefore, $90\div 264=0.34$ sq. ft. of radiation will be required for each sq. ft. of glass surface.

As the heat loss from leakage is due principally to wind pressure rather than temperature difference, we may assume that it will be practically constant for the usual inside temperature range, that is from 50 degrees to 70 degrees. The heat loss per sq. ft. of glass area with an inside temperature of 60 degrees was found to be 90 B.t.u., of which 60 B.t.u. is assumed to be due to transmission and $90-60=30$ B.t.u. due to leakage.

Taking an inside temperature of 50 degrees the radiator

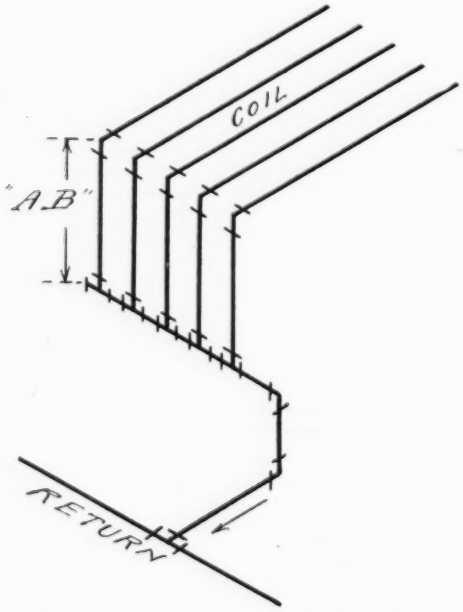


Fig. 3.—Return End of Coil, Showing Method of Taking Up Expansion for Coils under 100 Ft. Long.

efficiency will be $(180-50)\times 2.2=286$ B.t.u., the heat loss by transmission, $50\times 1=50$ B.t.u. per sq. ft. of glass per hour. Assuming the same loss by leakage as before, the total loss per sq. ft. will be $50+30=80$ B.t.u. and the amount of radiation to offset this loss $80\div 286=0.28$. In like manner, the factor for an inside temperature of 70 degrees will be $\frac{70+30}{(180-70)\times 2.2}=0.41$.

For low-pressure steam (1 pound gauge) the temperature of the coil becomes 216 degrees as against 180 degrees for hot water. Making the computations as before, except for the higher coil temperatures, we have the following factors:

Inside temperature 50 degrees, factor 0.21; temperature 60 degrees, factor 0.26; temperature 70 degrees, factor 0.31.

If, however, it is desired to carry a lower average water temperature in the coils, the "factor" must be increased accordingly, it being a simple process to determine the coil efficiency for any temperature desired. In like manner the "factors" may be reduced for a higher steam pressure. Few greenhouses require a higher temperature than 60 degrees, and this is usually taken as the basis when computing the radiation. If, in any particular case, a higher temperature is desired, it is a simple matter to determine the radiation by the method already given. While the factors given are computed for a minimum outside temperature of zero, the sealing of the joints between the panes of glass by the freezing of the moisture inside makes the factors practically safe for 10 degrees below zero as previously mentioned.

For lower outside temperatures, the method of computation is practically the same. That is, for 20 degrees below and an inside temperature of 60 degrees, the heat loss per sq. ft. of glass per hour would be $(60+20)\times 1.5=120$ B.t.u. as against 90 B.t.u. at zero. Placing these factors in the form of a table we have the following:

Hot Water Heating.		Steam Heating (1 pound pressure).	
Inside Temperature	Sq. ft. of radiation per sq. ft. of glass surf. for zero outside	Inside Temperature	Sq. ft. of radiation per sq. ft. of glass surf. for zero outside
50 degrees.....	0.28	50 degrees.....	0.21
60 degrees.....	0.34	60 degrees.....	0.26
70 degrees.....	0.41	70 degrees.....	0.31

It may be interesting at this point to compare these figures with those given by other writers for similar work under the same conditions. Philip McKee, in "The Metal Worker," gives the following for hot-water heating:

Inside Temperature	Factor for Radiation
50 degrees	0.30
60 degrees	0.34
70 degrees	0.40

Geo. W. Loeber, in "Domestic Engineering" for April 10, 1915, gives figures, which reduced to the same notation as those above, are as follows:

Inside Temperature	Factor for Radiation
50 degrees	0.25
60 degrees	0.33
70 degrees	0.44

It will be seen that these figures all correspond very closely, and, furthermore, they have been extensively used in practical work with satisfactory results.

In making computations for greenhouse heating all exposed surface must be reduced to *equivalent* glass surface (E. G. S.) before applying the factors given in the tables. The ratios employed in doing this will depend somewhat upon the material employed and the thickness of the wall. A common form of wooden construction for the walls below the level of the glass is two thicknesses of wooden sheathing with building paper between. Three sq. ft. of this construction may be taken as 1 sq. ft. of E. G. S. Concrete is being employed to a large extent in plants of considerable size, the thickness of walls commonly running from 4 to 8 inches. In this case employ a ratio of 3 to 1 for the thinner wall and 4 to 1 for the thicker.

In the best class of work it is becoming customary to double glaze the gable ends of the building, butting the panes of glass instead of lapping, this greatly reduces the heat loss by air leakage and also by transmission to some small extent. Glazing of this kind may be reduced to standard E. G. S. by calling 3 sq. ft. of double glazing equivalent to 2 of single glazing.

Inside partition walls are treated according to the conditions under which the plant is to be operated. In general, it is customary, unless otherwise directed, to consider each section independently, putting in sufficient radiation to heat any given section, even though those on each side are cold. The heat loss, however, by leakage will not be so great as in case of outside walls, because the direct force of the wind will be broken to a large extent. This may be allowed for by taking the glass

surface at its full value as E. G. S. and neglecting any loss through other wall construction, such as wood and concrete portions. When all sections are to be heated at all times, it is well, as a factor of safety, to add about 15 per cent of the inside partitions of each section to the total E. G. S. to care for any temperature differences which are likely to occur under working conditions in growing different kinds of stock.

The factors given for computing radiation are generous and should prove ample for all ordinary conditions, even for firing periods of 6 to 8 hours or more. In special cases, however, where the building is in a very exposed location, it may be necessary to increase the radiation from 8 to 10 per cent according to local conditions. In arranging the heating surface within the building, from 10 to 15 per cent more should be placed along the northerly and westerly sides than on the others.

Form and Location of Heating Coils.

For hot water heating the coils are commonly made up of 2-inch pipe, this seeming to give the most satisfactory results when both cost and freedom of circulation are taken into account. Another advantage is the greater stiffness, which makes it less liable to sag and get out of alignment. Frequently 1½-inch pipe, and even 1¼-inch, is used for coils of shorter length, where this size will give the required heating surface.

Pipes for the latter size are more commonly used for steam, because less surface is required, due to the higher temperature.

The arrangement and location of the heating surface will depend upon the stock grown and the arrangement of the beds. For bench work, flat or horizontal coils are run beneath the benches. When solid beds are used or the stock is planted in the ground, the surface consists principally of vertical coils run along the outer walls. Care must be taken in this case to distribute the surface as much as possible in order to equalize the heat. When all of the surface is located in this way the results are rarely

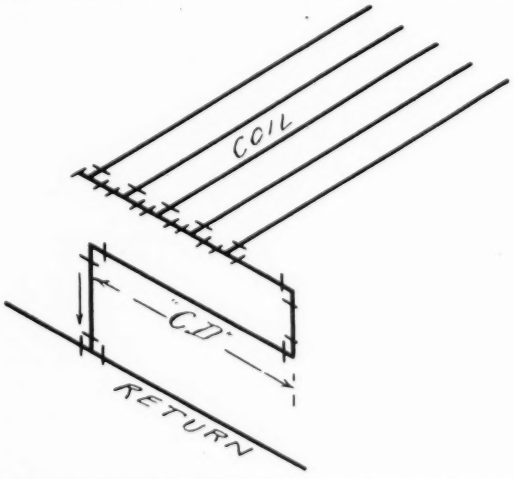


Fig. 4.—Typical Method of Taking Up Expansion in Coils over 100 Ft. in Length.

satisfactory and means can usually be found for placing a certain amount in the central portion of the space to be heated, by hanging coils to the roof supports or running them along the sides of bed. It is generally good practice to carry a single line of piping along each side of the building at the eaves to keep them clear of snow and ice.

The end gables require much less heat than the sides, and one line of 2-inch hot-water piping is usually sufficient for south and east exposures, and two for north and west exposures. When steam is employed, use 1½-inch pipe instead.

In many cases it is possible to distribute the heating surface, placing part of it along the outer walls and part beneath raised benches, which is the ideal arrangement.

In a house used as a garden and grapery, erected a short time ago, nearly all of the surface was in the form of vertical coils, hung from special pipe supports, set in concrete, at such an elevation as to be out of the way of

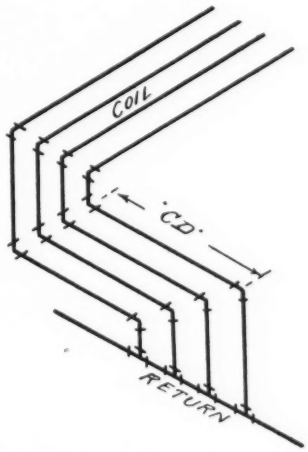


Fig. 5.—Another Method of Taking Up Expansion in Long Coils.

the growing plants, but not high enough to interfere with the grape vines, which were trained on wires about 2 feet below the roof.

For flat or horizontal coils it is best to use "built up" work, especially for the supply end, as shown in Fig. 1, as this eliminates the formation of air pockets, which are likely to occur when a branch tee is used and thus necessitating an air valve on each coil. Wall or vertical coils may be made up with branch tees in the usual manner without forming air pockets.

The method of spacing the pipes of coils beneath the benches will depend somewhat upon the personal ideas of the grower.

The three standard forms of coil are shown in diagram in Fig. 2, and are known as "close," "open" and "spread" coils.

In the absence of definite directions from the owner of the plant the second of these may be used as representing average practice.

Although three pipes are shown in the cuts the number in any given case will, of course, depend upon the required heating surface to be distributed throughout the building.

The length of the coil is only limited by the means provided for expansion and support. Lengths of 200 to 300 feet are common, and 500-ft. coils are used in some cases. The increase in length by expansion will depend upon the temperature, at which the pipe was fitted and the temperature of the water or steam turned into it. For pipes fitted at 32 degrees and filled with steam at 1 pound pressure (216 degrees), the expansion will be very nearly 1.5 inches per 100 feet of length.

In practice it is customary to allow the same figure, for hot water, although the temperature will rarely exceed 200 degrees, except in cases where the closed system is employed.

(Continued on Page 396.)

QUESTIONS & ANSWERS

HOW TO DRIP A RISER TO A DRY RETURN.

Editor "Domestic Engineering":—In Alfred G. King's article, "The Flow of Steam and Vapor," in the December 8th issue of your valuable paper, on page 424, is shown a riser dripped to a dry return, with check to prevent short-circuiting of steam to return pipe.

I would like to ask Mr. King the following question:

Will this check hold back the steam if pressure on riser should be raised to 5 pounds?

It does not seem so to me.

I have had trouble of this kind in installing heating systems, especially where we have used hot water radiation and connected flow to the top of radiator and taken off a return at bottom to carry condensation through a dry return. This dry return has check below water line of boiler to prevent water from leaving before pressure on return rises to same as boiler pressure, allowing for drop in length of main as usual.

Kindly tell me where I can get a book which describes this point in minute detail.

Iowa. A. L. E.

In accordance with A. L. E.'s request we submitted the above question to Mr. King, and his answer follows herewith:

The sketch referred to, by correspondent in Iowa, shows the use of a swing check valve on the bleeder connection from a riser to a dry return. Fig. 1 shows an elevation of

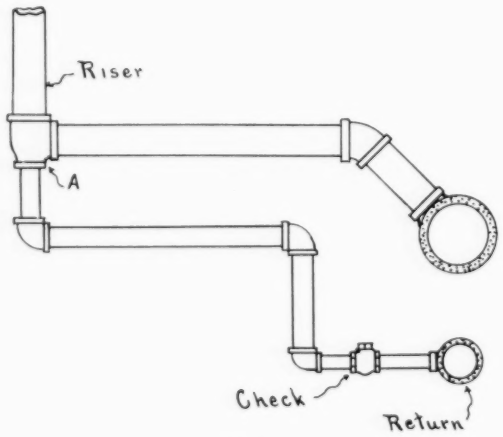


Fig. 1.

this connection. The article, quoted by correspondent, stated that the drip proper, and particularly the vertical leg of it, should be much larger than the horizontal connection in which the check is placed. For example, the drip connection being 1 inch, the check and horizontal connection to return should be ½ inch, or should the drip be 1¼ inch the check may be ¾ inch.

Regarding pressures: Correspondent has no doubt overlooked the fact that there is a pressure upon the dry return as well as upon the riser, and the pressure against the clapper of the check is a differential pressure only. This is overcome by the weight of water in the bleeder connection between point A at heel of the riser and the check valve The article states as follows: "This pipe in which the check is placed is reduced in size in order that the weight of water collecting in the larger pipe will easily move the clapper of the check valve. The use of a special light weight check for this purpose is advisable."

We know of no book on heating in which details of this character are especially treated. A. G. K.

A NICE PROBLEM IN COMBINATION SPRING WATER AND SOFT WATER SUPPLY TO HOUSE AND BARN.

Editor "Domestic Engineering":—Herewith you will find a diagram (Fig. 1) of a water supply system, on which I need some information. The ram is the owner's own make.

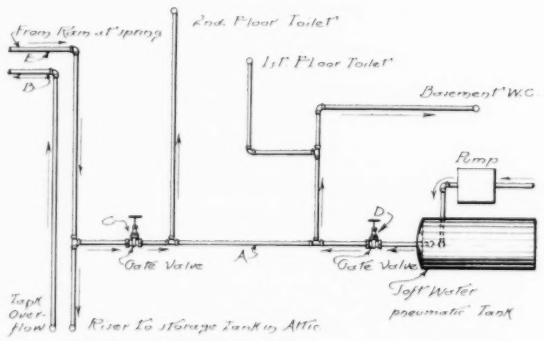


Fig. 1.

It works with a small air pressure generated by its own motion, and therefore works on a sort of perpetual motion principle. The water is to be pumped to an attic tank in the house, and the overflow from this is to go back to the barn to supply drinking fountains for the cattle. The house elevation is about 12 or 15 ft. higher than the barn, this being another reason why the water should go to the house attic first and then overflow to supply in barn. The water runs continually, as above noted.

The supply pipe should also be equipped with a shut-off to stop the supply to the house in very cold weather, and still supply the barn. I have already arranged the piping to the toilets for either soft or spring water, as noted on the sketch. The overflow can be made to run into a storage tank on the first floor of the barn, the tank in the house being much higher, as stated above.

The piping from the ram shall be run under ground, a distance of about 130 ft. The ram already supplies the

barn, but the change is to be made for the benefit of the toilets in the house.

Wisconsin. A Subscriber.

In the illustration shown in Fig. 1, which is a plan view of the piping scheme, suggested by "A Subscriber," we note that the common main A is supplied at one end from the soft water pneumatic tank, and at the other from the ram discharge pipe on its way up to tank in attic.

The location of barn is not shown in his sketch, but the overflow pipe B is intended to run over to it.

It would appear that the layout is good with the exception of a few small details.

The operation of the system is simply a case of opening or closing the gate valves C and D, when water in house is desired from spring or soft-water tank. To furnish spring water to house, open C and close D. To furnish soft water open D and close A. The plan is simple, which is desirable, and it is positive, which is essential.

We assume that the hydraulic ram discharge already runs to the barn and that the line E is diverted from the barn to the house tank. The overflow B, from house tank, only feeds the barn tank.

In this respect we suggest a cross connection at barn so that barn tank can be filled independent of house tank and in addition to the overflow filling pipe.

If the ram pipe ran direct to house and it was desirable to have an interchangeable combination system for both barn and house, the suggestion shown in Fig. 2 might be worked up to advantage.

With the arrangement of valves and connections shown in Fig. 2, either barn or house can be supplied from either spring of soft water source. The check valves prevent the higher pressure of soft water from blowing up through attic tank, should the operator forget to close tank valve when water is turned over from spring to soft water supply.

To furnish house and barn with spring water, open all cocks except A, B and C, which should be closed. Then ram delivers over and into attic tank openly. The plumbing pipes in house fill up first, then attic tank fills to lower overflow pipe D, which goes to supply barn tank. A ball cock at barn tank shuts off water when tank is full. Then ram water continues to rise in attic tank till it overflows into a sink or other fixture through a higher overflow pipe, E. This gives both barn and house an independent source of supply, the barn being secondary to the house.

To supply house with soft water and barn with ram water leave A and C closed, but open B and F. Then barn will get its supply of spring water just the same, and house only will be supplied with soft water, the check valve under attic tank preventing soft water from backing up into attic tank and overflowing it.

To supply house with spring water and barn with soft water close valves F and A, and open C and B. Then soft water is cut off from house and open to barn. The check at H preventing soft water from backing up line D and getting into attic tank.

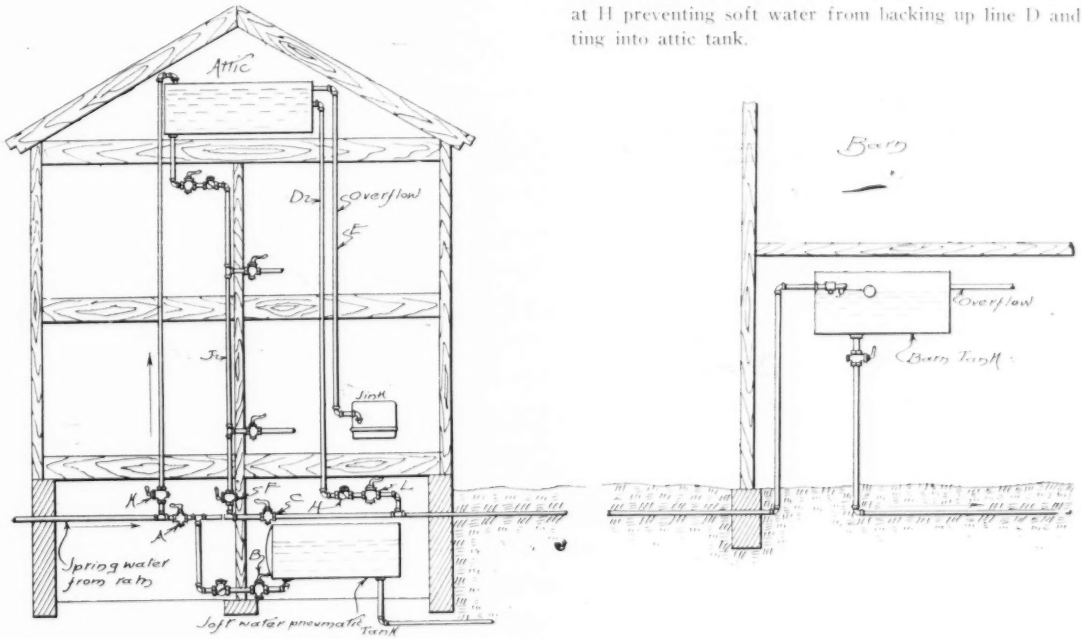


Fig. 2.

To cut out house entirely and supply barn with spring water, close valves B, K, F, and L, and open valves A and C. This gives a direct discharge from ram to barn tank, but as K is shut off, say to prevent freezing, the ball cock in barn tank should be held down with a stick to ensure a continuous uninterrupted flow from ram.

If ram gives out and both house and barn have to be supplied with soft water, close A leaving all other cocks open, including C.

Thus it will be seen that by operating the valves shown in Fig. 2, almost any combination can be obtained. It may appear puzzling for a farmer to operate these valves properly, but don't imagine that farmers are ignorant now-adays. Any farmer, who can earn enough money out of the soil to install a water works system knows something. He can operate these valves perfectly. He will do it better than the average city janitor.

We trust "A Subscriber" may receive some suggestion from Fig. 2, which will help him. We particularly draw his attention to the checks, and, in doing so, advise him to place a relief pressure valve on his hot water supply pipe at top of range boiler to take care of the expansion

COIL IN FURNACE TO HEAT RANGE BOILER AND RADIATOR.

Editor "Domestic Engineering":—The sketch herewith shows the layout of a small combination heating and hot water supply system, concerning which I am in need of some information. Now I would like to know the best and cheapest way to put a coil in the furnace and also place

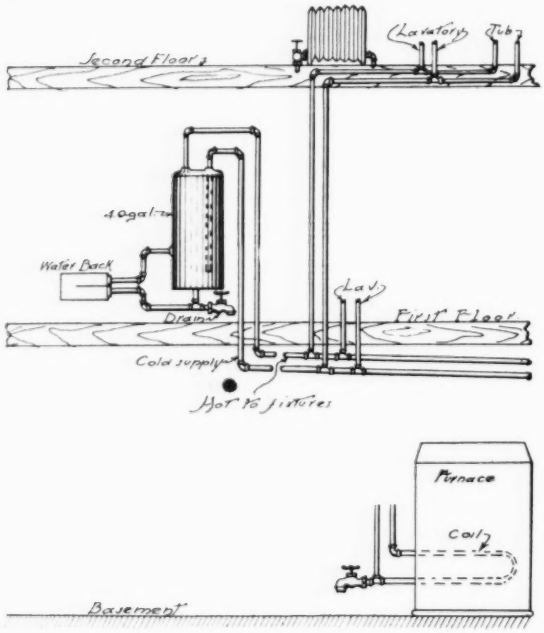


Fig. 1.

a 20 sq. ft. radiator in the bath room on second floor, and connect to range boiler.

The sketch, Fig. 1, shows the furnace in the basement, the radiator on second floor, the range boiler on first floor, connected to the water back in the stove. This is to remain connected to stove, but the connections could be changed, if necessary. What size pipe in coil would give the best results?

Wisconsin. "Competitor."

In Fig. 1 "Competitor" shows the plumbing as it now stands. He shows the location of the furnace coil, the location of the radiator in bath room, and the present piping in building.

Fig. 2 illustrates our suggestion for connecting up the coil and radiator in a manner that should insure perfect circulation to the radiator, and an abundant supply of hot water to the range boiler.

We do not know the exact amount of hot water that will be used, but if it is an ordinary residence, and if the hot water radiator will be in service during very cold weather, it would appear that three lineal feet of 1-inch pipe should constitute the coil in the furnace. This gives one sq. ft. of heating surface, which should be enough to supply all the hot water required, as well as heat the bath room when there is a good fire in the furnace.

We think the sizes of the pipes best adapted to this job are about as shown in Fig. 2. One-inch circulation pipes run from the coil to the branches, which rise to the radiator. A ¾-inch should be extended up to the range boiler.

These pipes must all pitch upwards from furnace coil to range and boiler and radiator.

In order to regulate flow through radiator it might be well to insert a half-inch round-way stopcock on flow pipe to radiator.

We show the hot water circulation from furnace coil to range boiler, connecting to the side outlet of boiler. The flow pipe from range water back, connects to top of boiler. This change is made in order to increase circulation through range circulation pipes, as the furnace coil may tend to reduce circulation through water back.

Care must be taken to insert 1-inch nipples with 1-inch by ¾-inch tees at top and bottom of range boiler, as shown in Fig. 2. The lower 1-inch nipple has to feed both furnace coil and water back. One inch is necessary here for that purpose. The 1-inch nipple on top of boiler is neces-

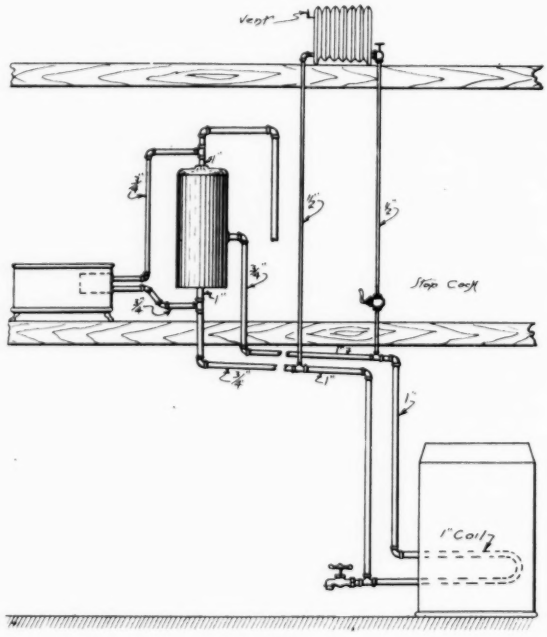


Fig. 2.

sary to prevent water being drawn up through water front when a faucet is opened. It insures drawing hot water direct from top of boiler only. These nipples must be very short.

If the work is installed as shown in Fig. 2, we believe that "Competitor" will have no trouble with it.

OBITUARY.

A. M. Watt.

A. M. Watt, who has been engaged in the plumbing business at 89 Joy Street, Boston, Mass., for more than twenty years, died recently at his home in that city.

A. S. W. Huffman.

A. S. W. Huffman, president of the Huffman-Conklin Co. and the Huffman Plumbing & Heating Co., of Columbus, O., died at his home in that city on Thursday morning, February 28th, after an illness lasting more than ten weeks. Mr. Huffman was born in Columbus, January 14, 1856, and lived all his life in that city. He was the owner of a plantation in the Isle of Pines, where he spent the winters for a number of years. He was a member of the Masonic fraternity. His wife and two daughters survive him.

LEGAL QUESTIONNAIRE

*Can a Plumber Collect for Plumbing Work, Which He Has Done in a New Building Which Collapsed Before the Work Had Been Completed? This Question is Here Answered in a Careful Manner**

By "The Judge"

Rights of Builder When Building Collapses Before Completion.

Editor "Domestic Engineering":—The collapse of a garage, in which I have been installing the plumbnig, has raised a question, which I should like to have your Legal Questionnaire Department answer.

I had a written contract with a man, who was building a garage on land owned by him. My contract called for a certain payment when the rough plumbing was in. After I had finished the roughing in, the garage collapsed, because of the negligence of another contractor, who was putting in the iron work.

Naturally, in the midst of the situation, caused by the accident, the owner was ready to do most anything to get started again, and he and I had some talk about my being paid for the first roughing in. He did not want to pay me the full amount called for by my contract for that part of the work. We did not arrive at a definite agreement as to what I was to be paid, but it was understood that I was to be paid with some small deductions for my own work on the job, and that I was to start over again on the contract from the beginning. The owner knew of the work, which I afterwards did, and it was on his order that I started the roughing in again.

When I called for my first payment, after the roughing in the second time, he claimed that he was hard up, because of the cost of the accident, and refused to pay me. I did not go on with the work, claiming that I should be paid according to the contract for the roughing-in. Later the owner became more deeply involved, and the construction mortgagee foreclosed the mortgage. What are my rights in the matter of the collection of the money due me for twice roughing in the garage?

H. W.

Answer:—On the above facts you have a very good case against the owner and can undoubtedly collect for roughing-in twice.

Before discussing the law I wish to call attention to the advantages of insuring against possible loss in building contracts, if the contract is of sufficient size to make it worth while to be protected against a total loss of materials and labor. This is especially true, if the contract is for the construction of a new building in its entirety. In these days of cheap construction and not over-competent labor, in many instances, it is well to be protected against losses due to collapses and like accidents, as well as against fires.

The courts seem to make a distinction between a contract, which provides for the construction of an entire building, and contracts, which are either for the repair of a building already in existence or for a part only of the work of construction, such as a plumber's contract or that of a plasterer, as distinguished from that of the general contractor.

Apparently the reason for this distinction is that, where the contract calls for the construction of an entire building, the owner is not getting what he paid for until he gets his building. Many, and in fact most, courts hold that if you agree to erect a building for a man, and it burns before completion, the loss is on the builder and not the owner.

On the other hand, the courts say, if the contract is one for repairs, or is for a part only of the construction work, the workman has increased the value of something, which already belongs to the owner, as far as the builder is concerned. In the one case the owner never gets what he agreed to pay for, and in the other he has benefited to the extent that his property, already in existence, has been increased in value.

In one case where a workman had contracted to repair a house for a certain sum, and had nearly completed the contract, the owner had entered and occupied it, and it was destroyed by fire, the court allowed the workman to recover the value of his repairs in an action for work done and materials furnished. The court said in this case:

"The precise ground, on which the plaintiff can recover in this case, is, that, when the repairs upon the house were substantially done, and before the fire, the defendant by his tenant entered and occupied it, and so used and enjoyed the labor and materials of the plaintiff, and that such use and enjoyment were a severance of the contract, and an acceptance pro tanto by the owner."

In another case a workman had a contract to lathe and plaster a house for the owner, the building being in process of construction. A fire destroyed the house before its completion, but the plasterer was allowed to recover for the work, which he had done.

Now as to the first roughing-in. You should be able to recover for the fair value of the work you did; this may be less than the contract price for the roughing in, but it cannot be more, of course.

As to the second roughing in, you should recover the contract price for this part of the work, on the ground that by agreeing that you should start over again on the contract, the contract was renewed upon the same terms that had existed before the accident. The only obstacle which I can see to your recovery for the work which you did the second time, is the possibility that the court might find that the owner's agreement to pay you a certain part of the contract price, after you had finished the roughing-in, was not such a condition precedent, which

(Continued on Page 397.)

*Every Effort is made to the End that these Answers may be authoritative. However, we cannot assume any Responsibility because of the very Nature of the Service, which is rendered without a personal Interview.—Editor.

The BIOGRAPHY *of a* SANITARY ENGINEER WHO BECAME *a* SENATOR

How He Graduated from the Tall Grass and Arrived as a Successful Business Man and a Senator in His State —He Made "Sanitary Politics" His Political Slogan

By Wallace H. Bancroft

THE Hon. G. Cooke Jackson was a star at getting the coin, and without embarrassing a bank or wrecking a building loan association. The honorable gent was in politics to the extent that he heard himself addressed as "senator," although he had never dined or played tennis with the President, nor had he seen the White House, except on picture postal cards.

He was the presiding genius of the Jackson Sanitary Engineering Company, and a live member of the Democratic wing of the state senate. He was a strategist in cornering contracts without price-cutting. Everybody in town admitted he was a wonder in spite of his early tall grass training.

He had not hurled himself into success. He has just eased into it, by virtue of crisp ideas hot from the brain pan. He had many friends; also a little crop of petty enemies in business and politics, whose snapping animosity was ninety-eight per cent envy. Men of achievement sometimes attract enemies, and quite innocently. These are the weeds—the fungus growth in the field of success. Senator Jackson was calm and philosophical. He viewed his enemies in the scientific light of cheap molecules of gray matter that really didn't matter.

There was a time when he was addressed as "Gus," and when the good plain folks didn't dream that he had any executive or senatorial corpuscles in his veins. In those days he rode a bike and used to lean or sit on cow-gates, swapping colored-weekly jokes with devilish yap frineds who "chawed terbacker," opened cold bottles behind corn cribs, and went to church socials in the country and dime museums in the city.

Attired in his evening clothes, no fastidious host or hostess, could tell by looking at him that he had once milked an obstinate Jersey or slaughtered a squealing hog. He was some bird. His veneer of acquired gentility looked like the real hereditary stuff. It was great camouflage. Only an imported butler, who had long attended the delicate wants of the Blue Bloods, could have gotten Senator Jackson's "number," and classified and indexed his pedigree. He wore his dress suit like a gentleman, without being conscious of the fact that he was "dressed-up." "He is the wonder of Yonkersville," exclaimed one of his old pals who heard of his fame and who was still sticking close to the potato and cabbage patches. "What a change the coin will make in human beings!"

How G. Cooke graduated from the rustic environs of the town and then post-graduated in business as a sanitary engineer, and then into an object of dignity in the state senate, may be of interest to his brothers of the plumbing craft, some of whom have "eased" or "breezed" into politics, while others never thought of it in their struggles on the lower rungs of the ladder of success.

When he said goodbye to the tall grass and slid into long pants, fate or something, tempted him into the realm of Hygeia, with the result that he entered a Yonkersville plumbing shop as an apprentice. He stuck four years. Then he qualified and blossomed out as a journeyman—a state of economic dependence which he cheerfully endured for six years—until he ventured forth and established his own bailiwick and engaged in the gentle art of estimating.

Early in his business career he began to realize that a wide acquaintance was a factor of success. He knew that publicity would stimulate it to a large extent. He therefore advertised consistently in the newspapers. But publicity was not enough. The personal equation must also be injected. He saw that he must cultivate a substantial circle of friends, people whom Dun or Bradstreet are in the habit of indexing. He was determined to extend his acquaintance not only in Yonkersville, which was constantly growing, but throughout the country as well. The town had developed until it could be classified as a city of importance. It was situated on the coast and it threatened to become a great seaport some day. The city could now boast of a smart set, an aggregation of factory and plant owners and their families. They had established bridge-whist clubs, city and country clubs and what not. Before the honest yaps and old settlers knew what was transpiring, a "close corporation," known by the humorists as "sassiety," had sprouted forth and reared its peacock feathers in their very midst.

Gus was an opportunist as well as a plumber. He saw the trend of local affairs. He had vision, foresight. In order to get the coin he could see that he should go where it abounds, not in rivulets, but in rivers. He believed he ought to get into the big puddle where the big frogs swim and hold high carnival. Why should he bother with small puddles and small frogs?

"The 'close corporation,' was the place to cultivate," he thought. If he could only break into that charmed and plutocratic camp. "Ay, there's the rub," he sighed with Hamlet.

He knew he couldn't break in without a passport. Brain alone wouldn't do the trick, he had been told by a college professor who tried it. "Brain minus coin is useless," quoth the professor, peering over his goggles. "But brains plus the coin, might make a social lion of you. Cash holds the balance of power. It overshadows mere brains!"

"Politics!" thought Gus, "is as a good a passport as any. Politics would be of value in extending my range of acquaint-

ances and friends. It would help me to 'arrive' as a business man. I must first make a drive into local politics before I can pass the threshold of the 'close corporation.'"

There was another factor in his plan for getting within social distance of the metal that radiates a golden luster, and that was his transition from "plumber" to "sanitary engineer." He knew that the name "plumber" had seen its palmiest days. It has outlived its usefulness. It is obsolete. "A plumber," reasoned Gus, "was originally a worker in lead, a way back in the days of antiquity. Today lead has been largely supplanted by other metals. Time was when lead constituted practically all that entered into plumbing installation. Today the plumber is confronted with problems in sanitation, in which the element of sanitary science enters. Why does the trade persist in sticking to the erroneous term of 'plumber'? I will bury the word in the sea of business. I'll inter it in the tomb of time with kindly memory. The day will come when the trade will do it officially. People have long been inclined to associate 'plumber' with the newspaper cartoons of the tinkering mechanic who wears patched overalls and decrepit head-gear, and smokes a corncob and is apt to boost the bill for services partly rendered. I for one, am going to give the public a truthful and correct definition of myself. I am a sanitary engineer, and I will sail my ship of business with that designation nailed to the masthead. Hereafter my establishment will be known as the Jackson Sanitary Engineering Co."

Gus had never been a regulation rustic. He was born in the salubrious tall grass zone, quite the same as other men who later developed positive signs of prosperity. He had scarcely tumbled out of his cradle when he began to indulge in the luxury of thinking, particularly when he wished to explore the location of the family sweets and preserves. When he burned his tiny fingers on the stove or collided head-first with the floor, he indulged in more thought—safety-first thinking. He continued to exercise his think tank after he was old enough to drive home the cows from the pasture and

> Up through the long shady lane,
> Where the quail whistles loud in the wheat fields,
> That are yellow with ripening grain.

He seemed to revel in the tasks of farm life. He could look work in the face and never bat an eye. He didn't contribute much time to "ole swimmin' hole" leisure such as Whitcomb Riley has immortalized in poetry. No, Gus used to tear himself from the "arms of Morpheus" with the first blush of morn and in time to inhale the scented breezes of the sunrise hours. He certainly had the work fever plus the the thought habit—not frenzied thought, for he never suffered from inflammation of the imagination. Mentally he was a heavy weight, although it was some time before Yonkersville "got hep" to the fact. Temperamentally he was blessed with plenty of wit and humor, which as a youth he used to waft over the bovine-gates and barbed wire hedges at the roguish lads of the neighboring farms.

Gus had never sidetracked books or looked contemptuously upon knowledge. As a consequence he had gained supreme control of the three R's and taken a course in a

"Gus assented. But he said that, if elected, he was to be a free agent and that he wasn't to be a mere puppet or tool in the hands of the moneyed interests."

business college, supplemented by some pretty deep quaffing at the well springs of literature. Hence he had secured a good sidehold on the King's English. He could hold his own with any chap that Yale, Harvard, Princeton or Cornell had ever turned loose in his direction. He could hand out the classic stuff like a thoroughbred. Furthermore he knew how to talk to a lady, be she a budding debutante or a grand dame, whose charity checks ran in three figures. When the title of "senator" was tacked to his name, he did it in consummate style, without the slightest break in the conventions of the elite. When Gus used to drive to the plutocratic section of Yonkersville, to study the ills of plumbing systems, he never forgot the dignity of his business. As a disciple of Hygeia, he balked at entering through kitchen or basement doors or crawling through coal cellar windows in order to talk to an imperious butler or maid. If he couldn't talk to the lady or master of the house, he simply departed with professional dignity. Gus wouldn't stand for butlers, maids or any other type of lackey. The master or mistress of the house were the ones who wrote the checks, and not the servants. Gus admitted, however, that he would have deviated from his policy, had he been called upon to remodel the plumbing in the domicile of J. Pierpont Morgan, Andrew Carnegie or any of their kind. "In that event," said he, "I would have rested content to talk to the chief housekeeper, the private secretary or even the head maid or butler. I would naturally know that J. P. or Andy would be too busy stacking up the coin to see anybody.

"It's quite proper to make an exception in the case of multimillionaires, but as for mere millionaires; well, I decline to humor their vanity by permitting their servants to dictate and give me instructions. A sanitary engineer can't afford to have his dignity lowered by teakettle engineers or other hirelings of aristocracy.

"I have always upheld the dignity of my business, and I never have allowed any of the smart set of Yonkersville to palm a servant off on me when I came to their homes to diagnose the plumbing. My services are as important as the physician's. Has he ever been known to enter by rear doors or coal cellar windows when summoned to the house? Has he been known to go into consultation with the maid or butler concerning the nature of the mistress's illness? Certainly not. Isn't sanitary engineering a branch of preventive medicine? Aren't the scions of wealth concerned about preserving their own health? Of course they are. Then why should the sanitary engineer explain the sanitary needs of the home to a servant, when the health and comfort of the plutocrat's loved ones are practically at stake?

Gus Goes Into Politics.

Gus had heard of no small number of plumbing contractors who had steered into politics and had blossomed forth with: "Honorable," "Senator," and "Mr. Mayor," attached to their names. Some of them didn't have to spend any heart-breaking sums of money either. They got wise to the art of "standing in" with the political powers, the men behind the throne of local and county affairs, the men who are always on the still hunt for suitable candidates that the public will tolerate.

Gus would furnish the brains while the political machine furnished the cash. Political machines may be decried by the idealists and civic reformers, but it is a notable fact that in our present stage of governmental development, the political boss is necessary, and his influence has often been constructive, and when it isn't, the people kick him out and another boss gets on the job.

Gus didn't lack nerve, cool, unmitigated nerve. As a business man the nerve trait still clung to him. He feared nothing and nobody. If there was a chance to get into politics he would seize it. Politics would be an asset to him in business. It would widen his sphere of friends and particularly those who are surrounded with currency. It would give him local prestige, enough of it perhaps, to enable him to tackle society and cultivate within its portals future business prospects as a sanitary engineer.

He had always had a suspicion that he could deliver the goods as an orator. The oratorical symptoms had first come over him when he was in knickerbockers. Later he cultivated the suspicion by taking a few dozen evening lessons in modern eloquence. When he didn't surcharge the class room with his oratory, he would steal off betimes to the cornfield and get vocal practice by addressing an imaginary audience—a stunt which Bryan is said to have tried during his juvenile days in Nebraska, and before he "put over" that red hot stuff known as the "Cross of Gold" speech.

Gus figured that if he could get the nomination for assemblyman or possibly state senator, he would make "Sanitary Politics" the party slogan. In his mind's eye, he could see the political posters with his picture in the center and with: "Vote for Jackson, The Sanitary Engineer Who Will Make a Sanitary Law Maker in the State Legisture. Elect him and Help Purify Politics."

Gus whispered his ambition to a close friend who later whispered it to Ex-judge Prentiss, who was known as one of the Democratic bosses of the district, where Yonkersville was situated. The close friend who knew the judge very well, suggested the name of Mr. Jackson, who he said was a native son, bright and rising young business man. "He is the head of the Jackson Sanitary Engineering Co.," said the close friend, "and the thought has occurred to me that he would be a man the people would vote for on the senatorial ballot. Two years ago we ran old Doc. Williams who has since turned out to be quite unpopular. The people won't stand for him again. In order to save us from an overwhelming defeat this year, we'll have to put up a man like young Jackson who can come out on the rostrum with the slogan 'Sanitary Politics.' The public will take kindly to that kind of a slogan. Besides Jackson is well known among the old settlers and the younger generation. He is also a whirlwind of a speech maker. I heard him once at a master plumbers' convention when he made a talk on the need of a new plumbing code. He's the boy who can put it all over the candidate of the opposition ticket."

Judge Prentiss was impressed. He agreed that a brand new man must be nominated. He said he would discuss the matter with the other Democratic leaders in Yonkersville.

Some weeks later, Gus was asked to come over to Democratic headquarters for a conference with the party leader. He impressed them very favorably. They told him they would push his candidacy, if he would accept the nomination. Gus assented. But he said that, if elected, he was to be a free agent and that he wasn't to be a mere puppet or tool in the hands of the moneyed interests. He would not permit domination to a degree that would be detrimental to the interests of the people. "The welfare of the community must come first, while I'm in the legislature," said Gus. "If you'll agree to that gentlemen, I'll make the race, and I'll try to put some pep into the campaign. If elected I will not be unmindful of any reasonable party obligations." His proposal was accepted, and in a few days the Jackson boom for state senator was started in the newspapers.

The day of the primaries arrived and Gus got the nomination. Then the campaign for sanitary politics was launched. The slogan struck the right cord in the public mind, judg-

(Continued on Page 396.)

The DAY BOOK *of the* BON TON DE LUX PLUMBING & HEATING CO.

Hank Olson and Jerry Dolan Formed a Partnership and Opened a Plumbing and Heating Business January 1, 1918 —Dolan Has Decided to Keep a Day Book, in Which He Records the Interesting Happenings of the Day

(Continued from Page 339 in the March 2nd Issue.)

February 26, 1918.

We hired a girl to stay in the office. She can use a typewriter, and she says she can keep books, and all we got to pay her is Five a week.

February 27, 1918.

I gave Hank the sheet that Canby gave me, and he says that there must be a grand piano mixed up in this cost sheet somewhere, but me and Hank looked it over some more and couldn't find it. I'll bet that there is a lot of these birds riding around in autos that is busted all the time and don't know where the money is going, but if they had a little dope on what it costs to run their flivvers, they would be riding in these yellow ones that follow the tracks and get their kick from a wire overhead.

February 28, 1918.

There was a mighty fine fellow in here today. He was sales manager for the King Brass Mfg. Co. and he gave me and Hank each a fine cigar, and his card with his name on it and "Sales Manager" underneath. He said that he had heard about us down in New York, and so he told his salesman that he was going to come up here and see us the next time that the salesman was making Minneapolis. Well, he had a fine line of stuff, all packed in nice little green bags like they keep stuff in a jewelry store, and he told us how good it was and how much they had sold to everybody in town, even Old Man Flannigan, and he gave us some prices. The prices were all discounts and he never said anything about list prices because he knew that we knew all of the lists anyhow. And so I told him to send a dozen of this and a dozen of that until he had about nine or ten items on the sheet, and I knew that it was time to stop then because that would make a pretty good order.

March 1, 1918.

Me and the bookkeeper have been pretty busy today getting out the bills for the month. Just about the same as last month, about a Thousand Dollars in new business put on the books. When we got to the bill for Higgins for fixing his sewer, I almost forgot about fixing the paving and then I thought of it, I called up Bill at the inspector's office and asked him about it, and he says that the repair crew will get around to that re-paving some time in the summer. Until then, he won't be able to tell how much that re-paving will cost. I don't know what to do, so I guess I'll buy a couple of real cigars and go down and see Flannigan's bookkeeper tomorrow and see how they do it.

March 2, 1918.

I went down to Flannigan's and the bookkeeper tells me that the matter of charging for re-paving has been the cause of all his grey hairs. He says, if he makes out the bill and writes that the bill for paving will follow, that by the time it follows the owner has forgotten all about the job, and the natural wear and tear to the street has made the hole about four times as large as it was in the first place, and besides that he has had to send out a load of dirt about every month to keep the hole filled up so that none of these flivver engineers will damage a $200 jitney at least $3,000 worth, and so the owner hollers his head off and swears that he is off Flannigan for life. And he says that if he guesses at it, that he always guesses too low, and even at that the owner kicks. So, he says, the best way, when the bill isn't too big to carry that long, is to wait until the re-paving is done and then fire in the bill just before you take your vacation so that you won't be around the office when the owner comes in with the big stick.

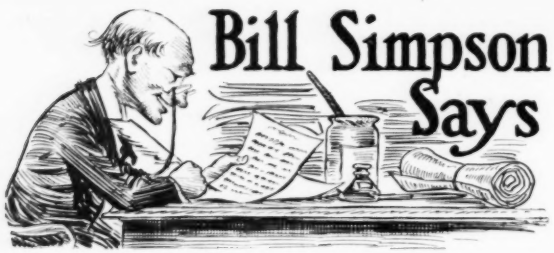
March 3, 1918.

Sunday. Me and Hank have been looking over the books that our girl Mayme has been keeping, and there must be something wrong, because her books show that we owe the Three States Real Estate and Mortgage Company $364.75 and the Century Plumbing and Heating Supply Co. owes us $291.18. Something wrong somewhere. She and me will have a session tomorrow.

March 4, 1918.

This was another big day for visitors. They started coming in the morning and kept drifting in all day long. One fellow was selling advertising novelties for a big concern down East, and he came in here to wait for the street car, and I asked him what he had in the big grip he was carrying and he said they was samples but most of them had been sold out. Anyhow, he opened the grip and showed me what he had, and he says he sold 1,000 like this to Brown and 1,000 like that to Black and 1,000 of this to White, and so on down the line, and some of the things looked pretty good but they was mostly the ones that was sold out. Well, I told him that I would like to have gotten about 100 of the calendars like he sold Black, the ones with a picture of a plumber and a nice bath room, only the fixtures wasn't like any that we use up this way but perhaps they use that kind down East where the calendars come from, and he said he was sorry that he couldn't do it but if I would take 500 he would try to fix it with Black to take 500 of another kind and so I told him to go ahead and send us 500. We got to advertise or else nobody will know anything about the kind of work we do.

(To be Continued.)



(With Apologies to K. C. B.)

Our town Bingville
* * *
Is the County Seet and
* * *
The senter of a Good Farming
* * *
Lokality. Now most of the Plummers
* * *
In Bingville figger that by the time
* * *
A farmer pays the interest on his
* * *
Secund mortgage he has no money left
* * *
For buying sanitary conveniences.
* * *
Smith, our progressive plummer, decided
* * *
That he would make sure. So, he sent
* * *
Out a well ritten letter to every
* * *
Farmer pointing out the advantajes
* * *
Of a Water Supply outfit—with
* * *
Running water in the house and barn
* * *
And other buildings.
* * *
He followed this
* * *
First letter up with other letters
* * *
And telephone and personal calls.
* * *
One by one the farmers came into
* * *
Smith's Plumming Shop to see what
* * *
A system would cost them.
* * *
Smith showed them a complete outfit.
* * *
And explained how a water supply
* * *
System would liten the wife's work,
* * *
Make it easy to feed the stock,
* * *
Safeguard against fire
* * *
And give him all the convenience
* * *
Of a city home. The orders
* * *
Came in slow—BUT THEY CAME.
* * *
Result is that Smith has a lot
* * *
Of work lined up out in the
* * *
Country, while the other plummers
* * *
Are bidding their heads off
* * *
Trying to land the few small jobs
* * *
In Bingville.

MONTANA MASTER PLUMBERS' ANNUAL CONVENTION.

Over one hundred delegates attended the twenty-first annual convention of the Montana Master Plumbers' Association, which was held on Friday and Saturday February 22nd and 23rd, at the rooms of the Plumbers' Association of Butte, Montana.

Interesting business sessions were held throughout the convention. Reports and essays were read, evoking much profitable discussion.

A feature of the entertainment program, was a visit by the delegates to the Washoe smelter at Anaconda, the delegates being conveyed there in automobiles. In the evening they returned to Gregson Springs, near Butte, where dinner was served, and this was followed by dancing.

On Saturday the following officers were re-elected for the ensuing year; President, Chester M. Harris, Great Falls; vice-president, Harry L. Hanson, Butte; secretary and treasurer, John G. Roland, Billings.

In the evening the annual banquet was held at the Silver Bow Club in Butte.

March 11, 12 and 13, 1918.—The annual convention of the Indiana Society of Sanitary Engineers, at South Bend, Ind., with headquarters at Oliver Hotel.

March 11 and 12, 1918.—The annual convention of the Missouri State Association of Master Plumbers, at Kansas City, Mo., with headquarters at the Coats House.

March 12 and 13, 1918.—The annual convention of the New York State Association of Master Plumbers, in New York City, with headquarters at Hotel McAlpin.

March 14 and 15, 1918.—The annual convention of the Nebraska Master Plumbers' Association, at Omaha, Neb. The sessions will be held at the Castle Hotel.

March 18 and 19, 1918.—The annual convention of the Kansas State Association of Master Plumbers, at Lawrence, Kan. The sessions will be held in the Chamber of Commerce.

March 27 and 28, 1918.—The quarterly meeting of the National Association of Brass Manufacturers, at French Lick Springs, Ind.

April 1 and 2, 1918.—The annual meeting of the Arkansas Master Plumbers' Association, at Little Rock, Ark., with headquarters at Marion Hotel.

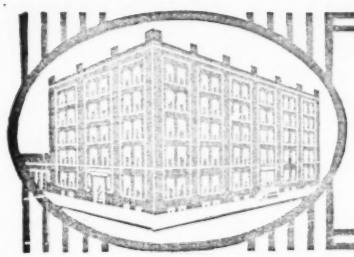
April 2, 1918.—The annual convention of the Massachusetts State Association of Master Plumbers, at Boston.

May 14-15, 1918.—The annual convention of the New Jersey State Association of Master Plumbers, at East Orange, N. J.

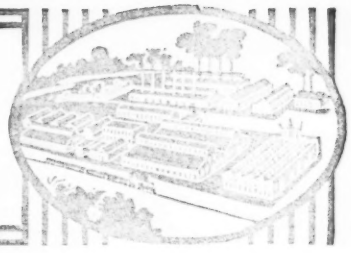
June 4, 5 and 6, 1918.—The thirty-sixth annual convention of the National Association of Master Plumbers, at St. Louis, Mo., with headquarters at the Planters' Hotel.

June 17 and 18, 1918.—The thirtieth annual convention of the American Boiler Manufacturers' Association, at Philadelphia, with headquarters at the Bellevue-Stratford Hotel.

September 3, 4 and 5, 1918.—The annual meeting of the American Society of Sanitary Engineering, at Chicago, Ill., with headquarters at the Congress Hotel.



Among the Wholesalers and Manufacturers



TO HOLD CONVENTION IN PHILADELPHIA.

The American Boiler Manufacturers' Association will hold its thirtieth annual meeting in Philadelphia on Monday and Tuesday, June 17th and 18th, with headquarters at the Bellevue-Stratford Hotel.

MARCH MEETING OF THE ILLINOIS CHAPTER.

The regular monthly meeting of the Illinois Chapter of the American Society of Heating and Ventilating Engineers will be held on March 11th at 6:30 p. m., at the Engineers' Club, 314 Federal Street, Chicago. Dr. E. V. Hill will lecture and show a new method of projecting microscopic slides.

ATLANTIC RADIATOR CO.'S ANNUAL MEETING.

The Atlantic Radiator Co., of Huntingdon, Pa., recently held its annual meeting at Wilmington, Del. President Schwoerer, who was unavoidably detained in Chicago, submitted his annual report, which was read by Vice-President Gates. The report showed that the company in 1917 experienced the most prosperous year so far in its existence. At a later meeting of the Board of Directors the following officers were elected for the ensuing year: President and treasurer, R. C. Schwoerer; vice-president and secretary, H. T. Gates. Mr. Gates was also appointed general manager, and Alfred W. Smith was elected assistant secretary.

MASTER PLUMBERS AND SUPPLY MEN CONFER ON BUSINESS CONDITIONS.

A sub-committee of a special committee, appointed by the National Association of Master Plumbers and by the Confederated Supply Associations, met on Monday, March 4th, at the Auditorium Hotel, Chicago. The purpose of this meeting, which was the second held in this city, was to discuss a plan of action for relieving the depression that exists in the building industry, particularly to encourage the overhauling and remodeling of plumbing systems in dwellings and factories.

The committee convened at 10 a. m. and adjourned finally at 6 p. m. Plans for launching a national advertising campaign with the slogan, "Do Your Remodeling Now," was considered from every angle. The campaign will embrace trade papers, magazines and newspapers, supplemented by the co-operative personal efforts of the plumbing and supply fraternities. The salesmen representing manufacturers and jobbers will also co-operate with master plumbers in different communities, relative to starting campaigns to interest the property-owning public to install plumbing in old buildings rather than postpone the work until after the war, when it is anticipated that rush of new building operations will bring on a scarcity of labor in repair and remodeling activity.

The committee was well pleased with the progress made at the recent meeting. In order to perfect details in the plan of campaign, the committee will hold another conference at the Auditorium Hotel, Chicago, on Monday, March 25th. It is expected that several meetings will be held later in other leading cities. Those, who are members of the committee which met at Chicago, are: L. McNamara, St. Louis, president of the National Association of Master Plumbers; Frank B. Lasette, of New York, vice-president of the National Association of Master Plumbers; E. J. Benning, vice-president of the Illinois Master Plumbers' Association; William J. Woolley, president of the Indiana Society of Sanitary Engineers; E. J. Hanley, St. Louis; James F. Conran and C. B. Nash, both of the Standard Sanitary Mfg. Co., Pittsburgh, Pa.; R. B. Flershem and Louis Bruch, both of the American Radiator Co., Chicago, and A. M. Maddock, president of the Thomas Maddock's Sons Co., Trenton, N. J.

AMERICAN SANITARY ENGINEERS TO SUPERVISE WATER SUPPLY AND SEWAGE DISPOSAL WORK IN EGYPT AND PALESTINE.

Harry Y. Carson, of the Central Foundry Co., New York City, and W. C. Groeniger, of Columbus, O., state plumbing inspector for Ohio, have accepted appointments on the engineering staff of the Red Cross Relief Expedition to Egypt and Palestine. This expedition will leave from an Atlantic port within a few days. Messrs. Carson and Groeniger are widely known sanitary engineers, and the Red Cross is to be congratulated on having secured their services. Their work will consist in solving water supply and sewage disposal problems in the countries named. Before leaving Mr. Groeniger, who is president of the American Society of Sanitary Engineering, appointed the following gentlemen to act in the official capacities herewith indicated: President, L. A. Cornelius, Grand Rapids, Mich.; secretary, J. L. Doud, Cincinnati; chairman of Research Committee, F. R. King, Madison, Wis., and secretary, Professor Arthur Bateman, Chicago.

NEW CONSTRUCTION WORK INCREASING.

Government construction work continues to gain in volume, and from present indications will soon exceed that of the so-called normal building, says "American Contractor." During the past week contracts have been let by the national government for a considerable number of hospital buildings, to be erected in many states at an estimated cost of $500,000 each. These contracts include hospitals in the states of Kentucky, Kansas, Illinois, Iowa, Texas, Washington, New York, Ohio, Michigan, New Jersey, Oklahoma, Missouri, Louisiana, Mississippi, Alabama, New Mexico, Georgia, Arkansas, North Carolina, South Carolina, Maryland, Virginia and California. Contracts have also been let for four reconstruction hospital buildings at Boston, Mass., to cost $200,000; for a $300,000 warehouse in New Jersey; for a $350,000

naval training camp in Michigan; for mechanical trade shops in Virginia, to cost $6,000,000; for three warehouses in Illinois, to cost $2,000,000; for the aircraft factory of a $2,150,000 plant in Pennsylvania.

Among the government projects contemplated are warehouses and wharves at Boston, Mass., to cost $20,000,000; a $2,000,000 powder plant in Delaware; painting in various locations, an estimated cost of $2,000,000, and many others.

Housing operations are likewise persistently active. The adoption of the conference report on the $50,000,000 housing bill by the senate last week insures the early expenditure of that amount by the government. Various housing projects are also maturing. Plans are being drawn for the Newport News Shipbuilding & Dry Dock Co. for workingmen's houses to cost $1,500,000. Plans have been drawn for 20 to 30 residences at Albany, N. Y., to cost $5,000 each, for Fred Rice. At Detroit 150 semi-bungalows and garages, to cost $3,100 each, are contemplated by the W. T. Porter Construction Co.

As this emergency construction work expands, the usual types dwindle into comparatively modest proportions, but a fair amount of it is current.

Among the private contracts awarded during the past week are the following: $200,000 auto display and sales building, Indianapolis, Ind., North Meridian Realty Co.; $250,000 factory, East Cleveland, O., Cleveland Tractor Co.; $200,000 state hospital, Oklahoma City; $200,000 municipal court-house building, Des Moines, Ia.; $150,000 office, warehouse and finishing building, Cleveland, O., Toledo Plate & Window Glass Co.; $3,000,000 factory, Alliance, O., Morgan Engr. Co.

Bids have been requested for the following: $250,000 hospital, Brooklyn, N. Y., Beth Moses Hospital; $100,000 theater, Trenton, N. J., Taylor Opera House; $150,000 foundry, Latrobe, Pa., Peerless Foundry Co.

Plans are maturing for the following: $400,000 garage, New York City, Commodore Biltmore Co., Inc.; $800,000 office building, South Bethlehem, Pa., Bethlehem Steel Co.; $300,000 apartment building, New York City, Crossman Bros. & Rosenbaum; $750,000 addition to plant, Chicago, Ilg Electric Ventilating Co.; $175,000 junior high school, Lincoln, Neb.

Harry Cooper, of the Harry Cooper Supply Co., Springfield, Mo., is spending several weeks at Hot Springs, Ark.

Charles D. Symms, president of the Plumbing Supply Co., of Sioux City, S. D., is at present enjoying the warm Florida breezes with his family. He plans to remain in the South for several weeks.

Paul Blatchford, secretary of the Central Supply Association, Chicago, will journey to Pinehurst, N. C., within a few weeks. Golf will be the feature of his sojourn there. Doubtless he will return in fine fettle for the coming spring offensive of the Western Trade Golf Association.

Waddill Catchings, formerly president of the Central Foundry Co., New York City, and recently made general partner in the banking firm of Goldman Sachs & Co., has just been elected a director of the Studebaker Corporation, of South Bend, Ind.

R. R. Rabe, sales manager of The Casey-Hedges Co., of Chattanooga, Tenn., was in Chicago this week on his way to Michigan, from which state he will return to Chattanooga by way of the principal jobbing centers in Ohio.

William E. Clow, Jr., vice-president of James B. Clow & Sons, Chicago, was tendered a banquet by the Jobbers Commercial and Information Exchange of Wisconsin and Illinois, at the Union League Club, Chicago, Wednesday evening, March 6th. Fifty-five members of the Exchange were present to honor Mr. Clow on account of his voluntary entry into the country's service, being stationed at the Great Lakes Naval Training Station, since January 2nd. Edward F. Niedecken, of Milwaukee, acted as toastmaster, presiding very ably in that capacity. Among the galaxy of speakers was Isidor Weil, of Chicago, who delivered a rousing address on the "Glad Hand." Mr. Clow's address on "Why We Will Win," was a talk that all will remember. Its sincerity and directness went to the hearts of the banqueters. It sparkled with the true spirit of American democracy.

T. H. Harker, sales manager of the Chicago Pottery Co., of Chicago, left last Monday on a three-weeks' trip to the jobbers of the Middle West. "Ted" expects to be away at least three weeks, but as he has qualified for the Aviation Service and has been notified to hold himself in readiness, he may be called to the colors at any time.

J. P. Coughlin has just been appointed auditor of the Atlantic Radiator Co., of New York City.

Carl J. Stein, the well known master plumber of Chicago, was in New York City last week.

William B. Neal, of the Chicago office of the Hammond-Byrd Iron Co., is wearing one of those "won't come off" smiles this week and passing out cigars to his friends. There's a reason.

William Redieske, of Minneapolis, Minn., Northwest representative for the Good Mfg. Co., of New York City, has been confined to his home for a few days following an injury which he received last week, when he fell on a slippery sidewalk.

E. A. Maginnis, of the promotional department of the Ahrens & Ott division of the Standard Sanitary Mfg. Co., Pittsburgh, Pa., has been transferred to the Chicago sales office of the company in the Karpen Building, having assumed his new duties on March 1st.

Harry E. Pursell, sales manager of the Kewanee Boiler Co., Kewanee, Ill., is contemplating a trip to Los Angeles, Cal., in the very near future. He will spend several weeks there, particularly upon that city's golf links.

Harry Verbeek, president of the Harry Verbeek Co., manufacturers' agents at Chicago, who has been confined to his home since the latter part of January, has now fully recovered his health. Mr. Verbeek suffered from an abscess somewhat like the one which has been troubling Ex-President Roosevelt.

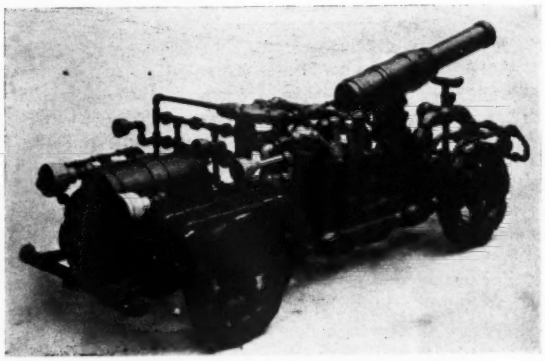
E. W. Sanborn, manager of the Chicago office of the Commonwealth Brass Corporation and the Detroit Range Boiler Co., both of Detroit, is looking forward to calling an early meeting of the officers and directors of the Western Trade Golf Association. The ideal spring weather that prevailed in Chicago on Sunday, March 3rd, developed within him a golfish restlessness—an intense longing to smash the gutta percha. Mr. Sanborn, who is president of the association feels that a meeting to arrange for this year's golf program will soon be in order.

Trade Calendars.

The Greenwood Mfg. Co., of Detroit, Mich., has just issued a combination calendar, catalog and price-list in the interest of its plumbing specialties. The calendar embodies a new idea in publicity work, and is neatly printed in several colors.

ARTILLERY AUTOMOBILE MADE OF IRON FITTINGS.

What ingenuity, patience and skill may do with fittings is well illustrated in the artillery automobile shown herewith, the original of which was on exhibition at San Francisco, in the Crane Exhibit, Palace of Machinery. The weight of the automobile is 700 pounds. It is six feet long by two feet, four inches wide, and it contains

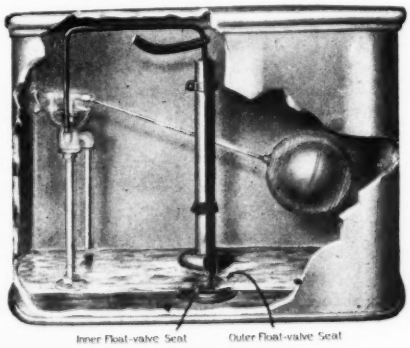


Artillery Automobile Made of Iron Fittings.

1,129 separate fittings, embracing practically all kinds of malleable iron fittings with a few of cast iron. The striking feature of this ingenious assembly are the well sustained proportion between the various parts of the automobile, the almost circular symmetry of the massive wheels and the impression it gives the observer that it ought to "go." The automobile was designed and constructed by Julius Gerion, a workman employed in Department No. 8-C, Plant No. 2, of the Bridgeport Division of Crane Co. It is now on display in Crane Co.'s exhibit rooms in New York City.

A NEW FLUSH VALVE.

After actual service under severe conditions for a period of 18 months, the Chicago Pottery Co., of Chicago, formerly known as the Alliance Co., has just placed the "Chicago" flush valve on the market, a new valve for



A New Flush Valve.

closet tanks, as shown in the accompanying illustration. In placing this valve on the market the manufacturers describe its construction as eliminating all wires, movable guide posts, etc. It is composed of a valve body, doughnut-shaped float and overflow tube, which is located directly over the spud. The float when released from its seats travels up and down the overflow tube, and only after practically all of the water is out of the tank does it seat. It is also described as being quiet, durable, with no loose parts to bend, loosen, stick or get out of alignment.

A NEW HOT WATER REGULATOR.

The accompanying cut shows a sectional view of the "Hotstream" regulator, which has just been placed on the market by the Hotstream Heater Co., of Cleveland, O. In describing this device the manufacturers state that "it can be attached to gas water heaters, making them automatic. As soon as the water in the storage tank is heated down to the regulator the main valve will close, due to the expansion of the copper tube, leaving the pilot burning. When water is drawn, cold water entering the tank contracts the copper tube, which in turn opens up the main gas valve and the heater will then burn until it has heated as much water as has been drawn and will then again shut off."

ABSTRACT OF THE CENSUS OF MANUFACTURES.

The most recent statistics of American manufacturing industries—which, unfortunately, under existing law, are compiled only at quinquennial intervals—are those derived from the census of manufactures taken in 1915, and covering the industrial operations of the calendar year 1914. The most important of these statistics are contained in the "Abstract of the Census of Manufactures," issued some time ago by the Bureau of the Census, which presents, in convenient form, with an alphabetical index, all the information needed by the great majority of persons interested in the progress and development of manufactures in the United States. It gives, for 340 separate manufacturing industries, statistics relating to number, size, and character of ownership of establishments, and States in which they are located; proprietors, officials, salaried employees, and wage earners, classified according to sex and, in the case of wage earners, according to whether 16 years of age or over, or under that age; salaries and wages paid; power used; fuel consumed; cost of materials; value of products; quantities of principal products; and various other items. Statistics somewhat similar in scope but in less detail are given with reference to all industries combined, for each State and geographic division, and for each of the leading 130 cities.

This publication, which is issued in the form of a 722-page volume 9½ by 6¼ inches in size, bound in cloth, is not for free distribution, but may be obtained by purchase, at 65 cents a copy, from the Superintendent of Documents, Government Printing Office, Washington, D. C.

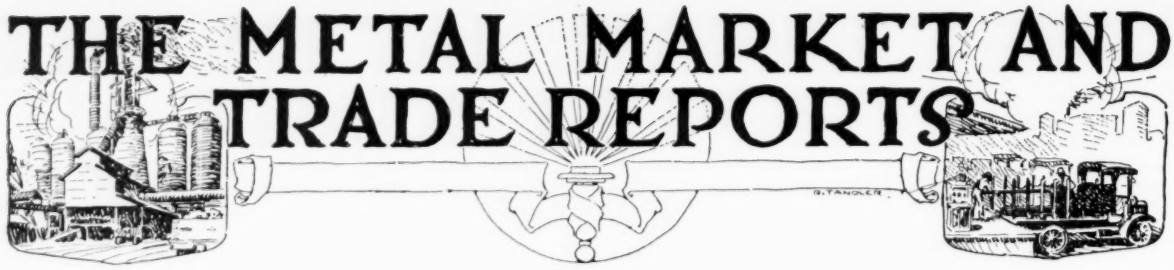
They Are So Dishonest.

"You simply cannot trust anybody. Every one seems so dishonest nowadays," declared the woman. "My maid, in whom I had the utmost confidence, left me suddenly yesterday and took with her my beautiful pearl brooch."

"That is too bad," sympathized the friend. "Which one was it?"

"That very pretty one I smuggled through the last time I was in Europe."—"Pittsburgh Chronicle Telegraph.

THE METAL MARKET AND TRADE REPORTS



Steel and Iron.

The question of probable prices of steel after March 31st was the chief item of interest last week. Representatives of the iron and steel trades met in New York to discuss costs and to prepare data for conferences to come at Washington, where prices to rule on and after April 1st are to be settled within the next three weeks. How the government will view the situation can only be conjectured, but the general opinion now inclines to the belief that there will be no radical change from the present schedules. But it is reasonable to assume that production costs will show a material increase over the figures submitted six months ago because of the unusual conditions, which have prevailed all winter, and any suggestion of a reduction of schedules would be unfair although during the past week there have been rumors to the effect that the government would advocate a reduction. The industry is just emerging from a period, never before encountered, when production was hampered to an extraordinary degree, and while just now the weather conditions are improving the industry is still feeling the effects of the extreme conditions which have prevailed for the past four months.

There has been a freer movement of coke during the last few days, and if only the empties are sent back to the ovens with the same celerity as the loaded cars went forward, the general position of iron should be greatly improved. There is room for further improvement although traffic conditions are much better than for a long time past and until they approach normal there is small chance for substantial increase in the output of the furnaces. They are still far behind in contracts and up to a day or two ago there was much complaint of delays in shipment. Producers are concerned in fulfilling current contracts more than in entering upon new engagements. They are well sold up, until next July, and are reluctant to contract for deliveries further ahead, especially in view of the possible changes after March 31st. Prices are based upon the old standard grades of No. 2 foundry and basic iron at $33, furnace, and will be operative until April 1st.

Lead.

Lead is in a strong position at present. Little is known of the market statistically because of the lack of knowledge of government requirements, but it is evident from the light offerings and the independent attitude assumed by sellers that there is no large surplus. Demand helped to stiffen the market. There is very little lead available for immediate distribution in New York, and there is still more or less uncertainty about shipment from the West, which makes the spot position all the stronger here. The ruling price for spot lead is $7.55 per 100 pounds.

Copper.

No material change in the copper situation has occurred during the past week. It is a routine market with production and distribution provided for systematically. Demands upon the producing capacity of the country have been unusually heavy, and exports alone for January amounted to 198,991,680 pounds more than in any month since last May. The total outturn of refined metal was only 185,000,000 pounds, which left only 76,000,000 pounds for domestic consumption of which 60,000,000 were absorbed by the government orders, leaving only 16,000,000 pounds for ordinary commercial purposes. This is a narrow margin, and bulls are making the most of the situation to bring about higher prices and encourage increased production.

Tin.

For an indefinite time there is not likely to be any spot tin for sale in New York in quantities that can be depended upon, and consumers and importers are becoming reconciled to their fate. The prospects of securing Straits tin are growing worse rather than better, and tin of all grades and qualities is not likely to grow cheaper as the war goes on. There is a good demand for Banka and Chinese for March shipment, and the price was held at 74¼c. The only spot sales that came to light were some odd lots of Banka, which brought from 84c to 86c.

Spelter.

The market showed a very slight degree of increased vitality toward the close of last week, which resulted in prices being a shade higher. Spot and March were quoted in New York at 7.95c to 8.10c with sellers at 8c.

New York Old Metal Market.

The following prices are current for old metals.

	Buying.	Selling.
Copper, heavy	23 cents	23½ cents
Copper wire	21 to 22 cents	23½ cents
Copper, light	18½ to 19 cents	21½ cents
Brass, heavy	14 to 14½ cents	16 cents
Brass, light	11 to 11½ cents	12 cents
Brass clippings	15 to 15½ cents	16 cents
Brass turnings	12½ to 13 cents	14 cents
Cocks and faucets	16 to 17 cents	18 cents
Lead, heavy	6 to 6¼ cents	6½ cents
Tea lead	5 to 5¼ cents	6 cents
Zinc scrap	5½ to 5¾ cents	6½ cents
Solder joints	13 to 14 cents	15 cents

Chicago Old Metal Market.

Chicago wholesale dealers' prices are nominally as follows:

	Buying.	Selling.
Heavy yellow brass	16 to 16½ cents	17½ cents
Brass, medium	13 to 13½ cents	14½ cents
Brass, light	11¾ to 12 cents	13 cents
Red brass	21½ to 22 cents	23 cents
Brass turnings	13½ to 13¾ cents	14½ cents
Brass clippings	16¼ to 17 cents	18 cents
Cocks and faucets	16 to 17 cents	18 cents
Copper, heavy	21¾ to 22¾ cents	23½ cents
Copper, light	19¾ to 20½ cents	21½ cents
Lead, heavy	5¾ to 6¼ cents	6⅜ cents
Tea lead	5 to 5½ cents	6 cents
Zinc scrap	5¼ to 5½ cents	6 cents
Mixed babbitt	7 to 7½ cents	8 cents
Lead dross	4 to 4⅜ cents	5¼ cents
Old iron pipe (per ton)	$23.00	$24.00

The Pipe Market.

There is no change in the pipe market. Quotations on less than car lots of full weight steel pipe remain as follows:

	Butt Weld.		Lap Weld.	
	Blk.	Galv.	Blk.	Galv.
⅛ to ⅜ inch	38	10	....	....
½ inch	42	26	....	....
¾ to 3 inch	45	30	....	....
2 inch	....	....	38	24
2½ to 6 inch	....	....	41	27
7 to 12 inch	....	....	38	23
12 to 14 inch	....	....	28½	....
15 inch	....	....	26	....

The quotations apply to all shipments from stock, regardless of quantity.

On extra strong and double extra strong steel pipe in less than car lots, quotations are as follows:

	Extra Strong.				Double Extra Strong			
	Plain Ends Butt Weld.		Plain Ends Lap Weld.		Plain Ends Butt Weld.		Pl'n Ends Lap Weld	
	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.
⅛, ¼ and ⅜ inch	31	11	....	....	....	....	....	....
½ inch	36	16	....	....	27	7	....	....
¾ to 1½ inch	40	20	....	....	30	10	....	....
2 to 2½ inch	41	21	....	....	32	12	....	....
3 inch	41	21	....	....	....	....	....	....
2 inch	....	....	33	14	....	....	25	6
2½ to 4 inch	....	....	36	17	....	....	27	8
4½ to 6 inch	....	....	35	16	....	....	26	7
7 to 8 inch	....	....	31	12	....	....	21	2
9 to 12 inch	....	....	26	7	....	....	....	....

With threads only, the basing discount is 1 and 1½ points lower. With threads and coupling the basing discount is 3 points lower. The quotations apply to all quantities less than car lots.

Quotations on full weight genuine iron pipe, in less than car lots, are as follows:

	Butt Weld.		Lap Weld.	
	Blk.	Galv.	Blk.	Galv.
⅛ and ¼ inch	16	+13	....	....
⅜ inch	17	+12	....	....
½ inch	21	1	....	....
¾ and 1 inch	26	8	....	....
1¼ inch	26	8	11	+6
1½ inch	26	8	18	2
2 inch	....	....	19	3
2½ to 6 inch	....	....	18	3
7 to 12 inch	....	....	18	3

These quotations are f. o. b. Pittsburgh, and apply to all shipments from stock, regardless of quantity.

On extra strong and double extra strong genuine wrought iron pipe, with plain ends and in less than car lots, the quotations are as follows:

	Extra Strong				Double Extra Strong			
	Butt Weld.		Lap Weld.		Butt Weld.		Lap Weld.	
	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.
⅛ to ⅜ inch	13	+7	....	....	....	....	....	....
½ inch	18	+2	....	....	5	+15	....	....
¾ and 1 inch	24	4	....	....	10	+10	....	....
1¼ inch	24	4	10	+10	10	+10	....	....
1½ inch	24	4	16	+4	10	+10	5	+14
2 inch	....	....	18	+2	....	....	5	+14
2½ to 4 inch	....	....	20	List	....	....	7	+12
4½ to 6 inch	....	....	19	+1	....	....	....	....
7 to 8 inch	....	....	11	+9	....	....	....	....
9 to 12 inch	....	....	6	+14	....	....	....	....

These retail prices are f. o. b. Pittsburgh, and apply to all quantities except in car lots. With threads only, the basing discount is 1½ points lower. With threads and couplings, the basing discount is 3 points lower.

To ascertain the price in any city, deduct the proper freight rate from Pittsburgh to that city. To illustrate: ¾ to 3-inch steel pipe, black, is 45 per cent off, Pittsburgh. The freight to Chicago is 31 cents, or it would be 45 per cent minus .031, or .419 per cent Chicago for 10 cents a hundred freight you should deduct one point.

NAVY CALLS FOR SUPPLIES.

The Bureau of Supplies and Accounts, Navy Department, Washington, has called for bids for supplying the following material:

For Washington: Copper tubing; torpedo bronze; brass valves.

For Norfolk: 6,500 lbs. copper tubing; 60,000 lbs. brass tubing; 300,000 lbs. reclaimed scrap; brass valves; brass wood screws; 360 bronze latches.

For Mare Island: 500 lbs. copper pipe; brass water cocks; 700 lbs. electric soldering paste.

For Charleston: Brass oil cocks; brass stop cocks; brass drop bolts; copper boat bolts; brass unions.

For Philadelphia: Brass steam and water joints; 1,020 brass oil cups; brass machine nuts; brass valves.

For Puget Sound: Brass steam and water joints.

For various deliveries: Brass tubing; copper tubing; brass bolts and nuts; brass valves; 1,044 brass disks; steam and water bushings; composition bends; Y steam branches, steam and water caps; steam couplings; steam crosses; steam water elbows; steam lock nuts; composition steam and water nipples; composition plugs; steam and water unions and composition tees.

PROPOSES RECORDING OF BRASS CASTING PURCHASES.

A bill has been introduced in the New York Legislature by Assemblyman L. W. Johnson, to amend section 62 of the general business law, by requiring metal dealers who purchase any "bronze or brass castings or parts thereof, sprues or gates or parts thereof," to get a signed statement from the seller showing when, where and from whom he obtained such property, also the seller's name, age, residence by city or town, with street address, occupation, name of his employer and place of employment. This statement the metal dealer is required to file with the chief of police.

Existing law carries the same requirement with respect to purchases by metal dealers of any pig or pigs of metal, copper wire or brass.

IRON ORE IN SOUTH AUSTRALIA.

William C. Magelssen, United States Consul at Melbourne, sends word to the Department of Commerce that it is reported that South Australia has an iron deposit containing millions of tons of ore which may be made available, through J. B. Labatt, of Adelaide, for any American investors who would undertake to work the deposit. The property is about three miles from a railway station and about 20 miles from Port Adelaide. The consul says that a qualified expert has certified that there are 3,000,000 tons of iron ore which can be mined immediately for about 24 cents per ton into wagons. It is possible to take the ore out easily with a shovel, and there are no engineering difficulties. An analysis of three samples gives percentages of iron, respectively, of 66.58, 67.31, and 66.29.

Breaking it to the Heir.

The expectant heir to his uncle's millions anxiously asked the doctor, when his uncle was taken ill, if there was no hope.

"What did the doctor say?"

"He told him there was no hope whatever. The chances were his uncle would get well enough to marry his housekeeper."—"Baltimore American."

J. B. Wise,
At the Age of 19 Years.

The Man and the Making of a Big Industry

By Alfred J. Norris

HOW a poor boy rose from obscurity to a plane of power and prestige in the manufacturing world. His belief in the nobility of labor and the value of human service.

CHAPTER I

Father and Son Form Partnership

Joseph Wise, the father, observing the caliber of his son's business acumen, his mechanical aptitude, his initiative and unbounded capacity for work—as evidenced in the brisk production of the one thousand drawer locks referred to in the first chapter—decided that he and his son could get on admirably as partners in business. His son was eager to join him in such a relationship. Hence in July 1877 they entered into business under the firm name of J. Wise & Son, the young man becoming business manager at the age of eighteen. Their place of business consisted of one room in the basement of what was then known as the Hitchcock Lamp Co., and which afterwards became the Jefferson Brass Works. This was the inception of the present establishment of J. B. Wise, Inc.

Joseph Wise and his son manufactured a line of cabinet hardware, locks and hinges for pianos, organs and sewing machine woodwork. They were compelled to work with crude tools—about the only appliances available being a hammer, cold chisel and file. On one occasion while making the most of these rather primitive tools, Joseph Wise sustained a broken thumb, but this did not deter him in his work. He continued to manipulate the file in order that the goods might be turned out and delivered on time.

Ideal Harmony Between Father and Son

It is evident that an ideal comradeship must have constantly prevailed between father and son. It seemed to be linked by bonds of mutual understanding and harmony which could hardly be surpassed. Their close co-operation in all things was an indication of the faith one had in the other. They worked side by side through the day and often into the long watches of the night when they could not afford to hire employes. Their team work was admirable, the son having implicit confidence in his father's skill, experience and mature judgment. The parent, on the other hand, respected his son's keenness of foresight and inventive ability. This intimate business alliance remained unbroken up to the day of the elder Wise's death.

Promptness was an inherent principle with J. B Wise. He rarely if ever disappointed his customers. He kept his promise to the letter even if it necessitated added expense and the burning of the midnight oil.

The firm of J. Wise & Son was begun on very limited capital. The financial struggle incident to its inception and early growth was little short of an ordeal, for it was often difficult to get sufficient funds ahead to sustain credit or pay cash for materials. This was apparent in the first year's business receipts which totaled $1,934. This amount was wrung, as it were, from the sweat of the brow and represented great effort.

J. B. Wise possessed imdomitable will to accomplish results regardless of obstacles. He always kept his eye on the goal before him. He recognized no defeat. He feared no barriers. If a thing were possible of achievement, he would put forth supreme effort to accomplish it. That was the character of the man. It was a part of him.

Takes First Trip as Salesman

In 1879, after the successful filling of some orders, which at that time appeared very large, he decided it would be a wise investment to journey West and visit the concerns that had given him business. On account of his newsboy connection with the railroad, he was given a pass from Watertown to Buffalo. From the meager funds he had been able to save, he purchased a traveling bag, suit of clothes, pair of shoes, a hat and a shirt at a total expense of $11. He was then prepared to start out on his first trip as a salesman.

He returned home highly elated with orders for $2,000 worth of work. He was bubbling over with enthusiasm

Building on Huntington Street.

and a full determination to make a success of the business which he was originally convinced was a good field.

Methods of Salesmanship

It was his maiden effort as a traveling salesman. The young man knew little if anything of the so-called "psychology" of selling or the different methods of driving home an effective sales argument.

He hadn't been schooled in the many niceties of the sales art as expounded by the regulation schools of salesmanship.

Young Wise, however, was imbued with something just as good as the schools have ever taught. He was inspired with the most intense earnestness about the merits of the goods he was going out to sell.

His belief in them amounted to absolute faith. Prospective customers felt the power of his earnestness. They saw that he had products which he himself believed in, and his belief inspired confidence. He was no glib, oily tongued talker nor given to "windy" expositions about the infinite superiority of his goods over those of his competitor.

His selling methods were from the first, direct and to the point—a-man-to-man directness. The frank, honest, open countenance of the lad, made his prospects realize that he meant what he said—namely that he didn't believe in misrepresentation nor in substitution. If he said an article was thus and so, the customer could rest assured that his word was as good as law.

He worked very hard to build up a clientele. He spared no pains to give his customers satisfaction in every detail of his relations with them. He realized early in his career that a satisfied customer was the best kind of an advertisement.

If difficulties presented themselves in his dealings with his customers, he strove hard to overcome them in favor of his patrons. The cardinal rules of business conduct that governed him from the start, were: hard work, common sense, good habits, practical experience and the value of the dollar.

J. B. Wise.

First Catalog Issued By J. B. Wise.

In the early upbuilding of the business, Mr. Wise worked without ceasing, being filled with all the ambition of the sturdy pioneer who hews his way forward through the dense forests, in order to clear space for a future habitation.

The modest little business developed gradually until its quarters became over-congested. More room for action was necessary. With twenty-five employes on the pay roll (five of whom are still in the employ of J. B. Wise, Inc.) the growing young firm moved into a small wooden building which was a part of the Remington Paper Co., on Huntington Street and now belongs to the International Paper Co.

Mr. Wise was so intensely absorbed in work at this time that he was inclined to neglect the necessity of eating. Therefore, that he might have his luncheon at a regular hour, his son, C. R. Wise, was delegated as a committee of one to fetch him food each day in a dinner pail. The lad would arrive at the plant and sit on an old flat top desk (which has been kept as a family relic) and chat with his father while he dined in typical workman fashion.

The partnership between father and son continued until the death of the senior Mr. Wise in 1886. After

Building Erected By J. B. Wise In 1895.

the passing of his father, J. B. Wise made an offer to his brothers and sisters, giving either of them an opportunity to enter into partnership with him in the industry, but all declined. He then made a proposition to them for the purchase of the business which at that time was in a prosperous and expanding condition. They accepted and he became the sole owner with the title of J. B. Wise.

Builds New Factory

Like a fat, overgrown and energetic boy impatient to wear bigger, heavier shoes and to adopt not only man-size but giant-size clothes, each year the industry grew and grew until in 1891 its increasing proportions demanded larger space and facilities. Mr. Wise then purchased from the Winslow & Knapp Lumber Co. the property previously owned by the Portable Steam Engine Co., located on the site of the present Mill Street plant of J. B. Wise, Inc. The business continued to increase steadily and rapidly, requiring larger space and greater capacity, until in 1895 he built a new factory on the site of the Winslow & Knapp Lumber Co., erecting the new structure over the old one, in order that the continuous operation of business might proceed. This was indeed a Herculean task but it was accomplished. It was Mr. Wise's idea and it was carried out without question. It involved much complicated labor. Workmen would tear out an old piece of flooring and replace it with a new one upon which they would move a machine and set it in operation, repeating this process during the erection of the building. In all the factory was closed but seven days. This was a brick structure three stories high, 207 feet long, with an average width of 45 feet, connected with an L 40x100 feet and three stories in height. After the new building was completed the old building was torn down. This was the nucleus of the present large Mill Street plant of J. B. Wise, Inc. It was completely equipped with all the latest improvements in machinery and tools. *(Advertisement)*

(The Third Chapter will appear in the March 16 Issue)

AMONG THE PLUMBING AND HEATING CONTRACTORS

Illinois

Committee of Chicago Master Steamfitters Confers with Government Officials at Washington, D. C.

A committee, representing the Chicago Master Steamfitters' Association, returned from Washington, D. C., recently, following conferences with senators and other officials, relative to encouraging the construction in the Central West of base hospitals, warehouses and other government works necessary in the war industries.

The committee pointed out that building interests in the West have felt that the Eastern states were receiving the bulk of government construction contracts. It was shown that in Illinois, for instance, labor conditions and housing facilities would be especially advantageous to the government in carrying forward the war industries.

Conferences were held with Senator James Hamilton Lewis of Illinois, Major Sterritt, chairman of the United States Contract Award Board; John Donlin, of the building department of the American Federation of Labor and others.

Government officials assured the Chicago committee that the West would be given consideration in the location of government works, but the federal authorities wished it understood that preference would be given to localities where no jurisdictional strikes are imminent.

The members of the committee were: J. J. Herlihy, president of Chicago Master Steamfitters' Association; Edward J. Claffey, vice-president; Charles Glennon, secretary; J. J. O'Shea and Harry Peckham.

Chicago and Vicinity.

The Chicago Master Plumbers' Association has recently sent out a letter to its members, suggesting ways and means of stimulating business during the war. The letter urges them to realize that they cannot operate their shops along pre-war lines, but must adjust themselves to the new conditions caused by the war. The letter points out that if a master plumber wishes to survive commercially, he must devise new methods of conducting business until the return of normal times. "It is up to you," the letter reads, "to stimulate business in every legitimate way. We advise that you handle and install vacuum cleaning machines, gas water heaters and similar appliances, gasoline storage equipments and other specialties, more or less connected with the plumbing and heating business."

The North and Northwest Side Master Plumbers' Pleasure Club has recently issued a challenge to the bowling team of the Milwaukee Master Plumbers' Association. The bowling aggregation of the first-named organization has been defeated in four games played with the Milwaukee team in past years. The Chicago men, however, are anxious to try their skill this year with a view to become victors in the match games. E. C. Wagner is captain of the local team, which has recently been engaged in strenuous practice in preparation for the coming games.

The A. C. Flynn Heating Co. has moved its establishment from 718 West Sixty-third Street to 4713 South Halsted Street.

The Carl J. Stein Co., of 853 South State Street, has been awarded the contract for the installation of the plumbing system in a factory to be erected, at a cost of $250,000, at 300-14 West Kinzie Street.

Charles Bieger, of 110 West Franklin Street, will install the plumbing in a work shop to be built, at a cost of $15,000, at 2338-2342 La Salle Street.

The P. Nacey Co., of 927 South State Street, has secured the contract to install the plumbing and heating systems in a restaurant to be remodeled at a cost of $50,000, at 426-28 South Wabash Avenue.

T. J. O'Malley, of 308 Oak Street, will install the plumbing in a barn and garage, to be remodeled at a cost of $15,000, at 528-34 Vedder Street.

Fred Klemz, who has been conducting a plumbing establishment for many years on the Northwest Side, has the sympathy of his friends in the trade on account of the death of his wife.

The joint arbitration committee, representing the Chicago Master Plumbers' Association and the Chicago Journeyman Plumbers' organization, held a preliminary conference recently to discuss matters of mutual interest, principally the wage schedule for the coming months.

Other Cities in the State.

McEvilly & Flynn, of East St. Louis, have been awarded the contract for installing the plumbing system in a new $10,000 bungalow at Winstanley and Seventeenth Streets.

John W. Kessler, of Robinson, has secured the contract for installing the plumbing in a garage and sales room to be constructed at a cost of $12,000 at Champaign.

George A. Gent, of Edwardsville, will remodel the plumbing in a bank in that city.

Missouri

St. Louis and Vicinity.

The St. Louis Master Plumbers' Association has elected the following as delegates to the Missouri State Master Plumbers' annual convention, to be held in Kansas City, Mo., March 11th and 12th. F. M. Morx, E. J. Hanley, C. Groeschel, W. H. Kuhns, S. A. Kierman, J. Sheehan, Sr., L. Frick, F. J. Praechter, Henry Ryffel, J. F. Corrigan, E. C. Reisel, James J. Nobel, William Hunt, and F. W. Gloeckner. St. Louis will have a complete delegation, as it has always done at state and national meetings.

The Planters Hotel has been selected by the Committee on Arrangements as headquarters for the annual convention of the National Association of Master Plumbers, which will be held in St. Louis in June. Announcement has not yet been made as to where the sessions of the convention will be held. Local committees have been busy on plans for making the entertainment features of the 1918 convention eclipse those of previous years.

Following up the government's survey and report on sanitary conditions surrounding some of the army canton-

ments, and the action which followed the report, the master plumbers of this city have opened a campaign against certain insanitary conditions now existing here. An appeal is being directed to the Health Department of the city to follow the example of Little Rock, Ark., and other cities adjacent to cantonments, by issuing an order to do away with privy vaults and other places where disease and diseases-carriers are bred. A special committee has been appointed, which is now launching a vigorous prosecution of the project to make St. Louis a disease-free town.

Following the government's survey and the report showing how the privy vault was a menace to health and therefore a drain upon the country's man-power, rigid orders were given that had the effect of doing away with all such places within a radius of 45 miles of the cantonment at Camp Pike and other places.

Arguing that, besides being a city of 800,000 population, St. Louis is, by reason of its geographical location, a gateway of the nation through which, in one week, as many soldiers pass as are gathered in any of the cantonments, the plumbing fraternity here hope to bring to bear such pressure as will cause a similar order in this city. With such action, 20,000 privy vaults, of such type as have been eliminated from most all other large cities, would be disposed of. The assistance and co-operation of the Chamber of Commerce and other organizations of a municipal-improvement character, is being solicited.

Kansas City and Vicinity.

The annual convention of the Master Plumbers' Association of Missouri will be held in Kansas City, on Monday and Tuesday, March 11th and 12th. The headquarters of the association will be at the Coats House. The principal address of the convention will be given on Tuesday morning by Prof. E. J. McCaustland of the Missouri State University, who is a sanitary engineer. His address will deal with Modern Sanitation in regard to its Installation in the Country, on the Farm and in the Small Town. Architects, members of the city Board of Health, members of the different medical societies and others have been invited to hear this address. L. McNamara, president of the National Association of Master Plumbers, is expected to attend this meeting. At the request of the state president, A. A. Zertanna, of St. Louis, Mo., this convention will be strictly a business meeting, and he has asked the local committee, on account of present conditions throughout the country, to eliminate all public social features. One of the important topics for discussion, that will be brought up at this meeting, will be the subject of the "Universal Code."

At least 100 members of the association are expected to attend the convention, sixty of whom will be regularly elected delegates. The committee on arrangements consists of the following gentlemen: C. L. Smith, secretary of the State Association, chairman; S. S. Sandy, of the McMahon Co., and E. A. Schenck, of the Justus-Schenck Co.

Kansas

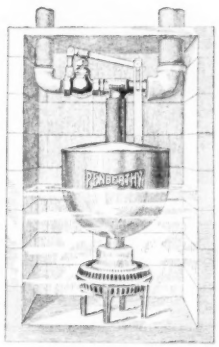
The Master Plumbers' Association, of Kansas City, Kan., is 100 per cent organized. Every plumber in the city being a member of the local association and all anxious to get the full benefit of such an organization, and with that one idea in mind they recently invited J. P. Cunningham, president of the Missouri association, and Geo. P. Kirtley, the general secretary, to talk at their regular meeting on "Cost Finding and How to Run a Plumbing Business on a Strictly Business Basis."

Get Rid of Surplus Water

The season is here for flooded cellars and basements. The easiest, surest and best way to prevent property damage is by installing the

TRADE PENBERTHY MARK.

Automatic Cellar Drainer



The Penberthy can be installed in very little space with the minimum labor and expense.

Cannot rust or corrode, because all working parts are above water.

Starts and stops automatically. Operates by either steam or water pressure. Costs but a trifle to maintain. Requires no attention whatever. Made in five sizes.

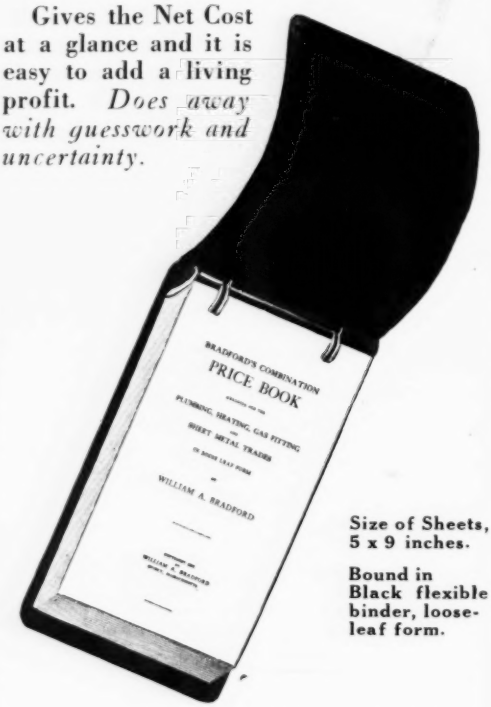
Detailed description and complete installing specifications on request.

Penberthy Injector Co.
(Established 1886)
Detroit Michigan

The Bradford Price Book

Relieves the Plumber and Fitter of tedious figuring to arrive at the proper re-sale prices of materials.

Gives the Net Cost at a glance and it is easy to add a living profit. *Does away with guesswork and uncertainty.*



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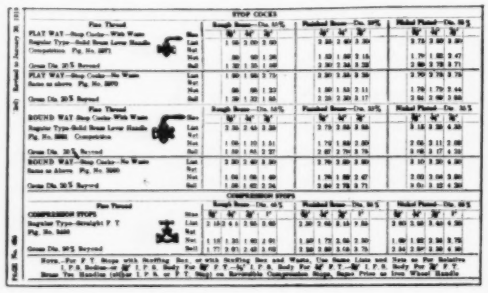
A Great Help for Plumbers and Fitters

"I hand you enclosed check to cover price of 'Bradford's Price Book' which came to hand today. I think you are doing a great thing for the plumbers in getting out this book, and trust you will meet with great success."

(Signed) G. Wilbur Thompson
Newton Centre, Mass



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William A. Bradford

Department C

5 Maple Street **Quincy, Mass.**

Massachusetts

Boston and Vicinity.

Former National President James S. Cassedy, of Cambridge, who attended the recent meeting of the board of directors of the National Association of Master Plumbers, at St. Louis, of which he is now a member, addressed the Boston Master Plumbers' Association on February 26th. In addition to making an oral report of the meeting, Mr. Cassedy told some interesting details of his trip in the South. He returned by way of New Orleans and inspected the mammoth filtration plant there, by means of which the water of the Mississippi river is made available for use of the inhabitants, and he described this in minute detail. Mr. Cassedy also told of the activities of some of the live Master Plumbers' associations in the South.

The legislative committee on public health has reported adversely on House bill 885, which provided for an increase in the fees for the registration of master plumbers.

Mayor Peters, of Boston, has approved a contract with the Power Heating and Ventilating Co., of 63 Beverly Street, Boston, for furnishing and installing heating systems in fire stations at East Boston and Charlestown. This company bid $2,000 on the East Boston job and $2,100 on the Charlestown job. Other bidders with their figures, the first representing the East Boston job and the other the price for the Charlestown work, were as follows: E. T. Keefe, of Brighton, $2,239 and $2,398; J. J. Hurley & Co., Boston, $2,331 and $2,320; T. A. Ridder & Co., Boston, $2,390 and $2,430; Huey Bros. Co., Boston, $2,450 and $2,622; Frank E. Woodward & Co., Boston, $2,452 and $2,587; Laskey & McMurrer, Boston, $2,533 and $2,691; Massachusetts Sprinkler and Equipment Co., $2,573 and $2,773.

George H. Taylor, head of a prosperous plumbing business at Wakefield, is a candidate for re-election as a member of the board of selectmen of his home town, and, although there are ten candidates for five places, his friends are perfectly satisfied that he will be returned to office.

William H. Jellison, a plumber of 1099 Massachusetts Avenue, Cambridge, has filed a petition in bankruptcy, scheduling liabilities of $2,901 and assets amounting to $939.

Plumbing Inspector Edward J. Murphy, of Easthampton, in his report for 1917, records the installation of 579 fixtures on the issuance of 87 permits.

New Hampshire

Manchester master plumbers have inaugurated a "do your plumbing now campaign" as a means of protecting their customers from disappointment and delays later on. The recent campaign to enroll men available for call for shipyard work for the government resulted in practically every journeyman plumber in Manchester registering and expressing his willingness to go into the shipyards, if called. While it is not considered likely that the men will be called for some time, possibly not until fall, the master plumbers saw prospects of a serious shortage of help when the time comes. The matter was discussed at length at a meeting of the Master Plumbers' Association, and the association took its stand squarely behind the government and commended the journeymen for their action. At the same time the associ-

ation decided to urge upon their customers the advisability of having any contemplated work done early in the spring season rather than to wait until the fall, which is naturally the busy season and when the shortage of help is likely to be more seriously felt. Similar conditions undoubtedly exist in many other of the large cities in New England.

Superintendent of Public Buildings James A Rogers, of Manchester, has sent notices to all master plumbers notifying them that the plumbing inspection department of the city has now been placed under the direction of the board of health.

Connecticut

I. Goldenburg, plumbing and heating contractor of New Haven, has been given the plumbing and heating contract, for a house being erected on Laurel Street in East Haven. He also has in hand a similar contract for a house in West Haven for J. D. Kauffman.

Jacob Melicovsky, a master plumber of 591 Front Street, Hartford, has filed a petition in bankruptcy scheduling his liabilities at $40,617 and his assets at $7,595.

The appointment of George A. Powers as plumbing and sewer inspector at Stamford, Conn., followed the death some time ago of George G. Conron, who had held the office for many years, has met with general approval. Mr. Powers has been called upon to make many inspections during the past few weeks and considerable more building is looked for in the spring, as the demand for dwellings throughout the city is great.

New York

New York City and Vicinity.

Headquarters for the annual meeting of the New York State Association of Master Plumbers, to be held in New York City on Tuesday and Wednesday, March 12th and 13th, will be at the Hotel McAlpin, Broadway and Thirty-fourth Street. The local committee and members are determined to make the meeting a memorable one and are preparing for a big attendance. On Monday evening, March 11th, the Manhattan branch of the New York City Association will tender a testimonial dinner to their esteemed brother member, State President Jeremiah L. Murphy, at the Hotel Astor.

Michael Dumey, of 98 Jerome Street, Brooklyn, will do the plumbing work in a new $50,000 ice plant at Blake and Van Sinderson Avenues, for Rubel Bros., Inc.

Plans are being prepared for a new $100,000 ship yard and machine shop to be built at Arverne, L. I. Walter Trempe is the architect and engineer.

Other Cities in the State.

The Master Plumbers' Association of Albany, at its regular monthly meeting last week, elected delegates to the annual convention of the New York State Association of Master Plumbers, to be held in New York City on Tuesday and Wednesday, March 12th and 13th. Delegates: Joseph Nicklas, president; Edward Ryan, Frank F. Schimpf, and William R. Cassidy. Alternates: John T. Kerwin, Joseph O. Stapf, Clarence S. Keeshan and M. J. McKeon.

What is a shirt in a man's life?—One shirt more or less or two; green or blue; old or new. 'Tis nothing, true,—to me or you.—But not so with Francis N. Hoeffer, of John Douglas Co. Hoeffer had just paid the bill for a dozen or so new silk ones. The bill was of staggering proportions, weighted down, or hoisted up, with extra

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You are missing a mighty big money-maker if you ignore this Speakman specialty.

Write now for full particulars

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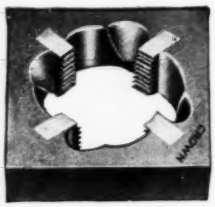

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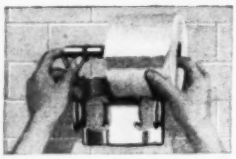

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They stand out as the best non-syphon trap in the world today.

Used by the Government, as well as all good plumbers.

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Second Avenue and Antoinette Street DETROIT, MICH.
Sole Manufacturers

The Modern Way

Saves time and money and makes it easier to connect up fittings to soil pipe already installed.

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does away with springing of stack and removing whole lengths of pipe. Cheaper and makes a most satisfactory job.

Drop us a postal for prices and details.

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war costs and advances. But he paid it cheerfully. He hadn't hooverized a bit, when he selected the shirts, and they were "some shirts." They had just been delivered to his Syracuse home. He was sitting in the Rathbun at Elmira, N. Y., complacently reading in the evening paper about the rising cost of potatoes, bath tubs and shirts, when an urgent long-distance call summoned him to the 'phone booth. An excited voice at the other end told him, in snatches of intelligible portions of the one-sided conversation, that his home in Syracuse was burned or burned down—wife and daughter barely escaped and—"Holy Smokes!" broke in Hoeffer, "How about my new shirts?"

Pennsylvania

Philadelphia and Vicinity.

Such protest has been made by local plumbing and heating men against two bills introduced recently in councils to regulate the storing of explosive and inflammable material, that a public hearing will be held on the measure by a sub-committee of Councils Committee on Law. The principal bill is designed to make it prohibitory to store or keep powder, hemp, flax, hay, firewood, shavings, chemicals or "other explosives or combustibles" in any building partly occupied as a dwelling or sleeping apartment. The fire marshal is authorized to prosecute violators and a penalty of $50 fine is prescribed. The companion measure prohibits the keeping of the aforesaid materials for sale on similar premises. George Elliott, the fire marshal, endorses the proposed ordinances as affording additional protection from fires by night, but strong opposition has developed among retail druggists, heating contractors, plumbers, builders and other business interests. It is said that the wide term "any other explosives or combustibles" makes the measure so drastic that it would prevent men in the lines named from living above their places of business.

The contract for the piping in Power House No. 22 has been awarded to J. H. Hutchison, 1025 Callow hill Street. Mr. Hutchison's bid was $5,700. The work is to be completed inside of thirty-five days.

H. Goldner, of 425 West Lehigh avenue, has been awarded the contract to install a plumbing system in the property at Tenth and Filbert streets, for S. Sternberger Co.

J. Schlenz, of 2901 West Lehigh avenue, has been awarded the contract to install a new plumbing system in the property at 2220-22 Lehigh avenue.

M. Shenkes, of 1816 South street, has been awarded the plumbing and heating contract on a new apartment house, which is being erected for Kahn & Greenberg.

J. J. Rufe Sons, of Doylestown, have been awarded the plumbing contract on another new building, which is to be erected at Farm School for the National Farm School.

Gus Lukens has opened a plumbing establishment in Doylestown, and would like to receive catalogues from jobbers and manufacturers of plumbing goods.

Wilkes-Barre and Vicinity.

Ed. P. Schonk, of Wilkes-Barre, has secured the contract to install a new heating system in the Metropole Building, and a $3,000 contract for plumbing and heating in the new three-story building on South Main Street, owned by Davidow & Hurwitz.

Charles J. Bauman & Co., of Wilkes-Barre, have secured the $2,700 plumbing and heating contract in connection with the rebuilding of the Weitzenkorn Building on East

Market Street, which was almost totally destroyed by fire a short time ago. It will be a two-story structure.

John M. Parry, of Wilkes-Barre, has just completed the plumbing and heating systems in the two-story cap factory on Pennsylvania Avenue of the Anthracite Supply Co.

Other Cities in the State.

J. D. Woodworth & Sons are building a new plumbing shop and garage for their business at Shickshinny.

John L. Turner & Co., of Nanticoke, are selling their hardware stock and will in the future confine their energies to their plumbing and heating business.

Bart J. Mahon, of Parsons, is installing a steam heating system in the Sigafoos residence at Kingston.

Kentucky

F. A. Clegg & Co., of Louisville, have just secured the following contracts: Installing a vacuum heating system in the entire group of buildings of the Sisters of the Good Shepherd in Louisville. This concern will also make all engine connections in the power house for the quartermaster's depot at Jeffersonville, Ind., as well as remodel the heating system in the L. & N. Railroad Co.'s depot at Russellville, Ky.

A. W. Clegg, son of F. A. Clegg, president of F. A. Clegg & Co., Louisville, who enlisted in the army in the quartermaster's department last December and was sent to the quartermaster's camp at Jacksonville, Fla., has been appointed first-class quartermaster's sergeant in the U. S. Army, having been promoted from a private to this rank in two months over a company of 138 men. Quartermaster's sergeant is the highest non-commissioned office in the quartermaster's department, and Sergeant A. W. Clegg is now receiving congratulations on his rapid promotion from his many friends. He is now stationed at Camp Devens, Ayers, Mass.

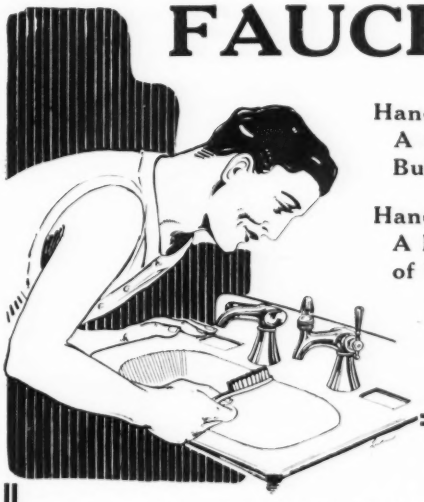
Ohio

Cleveland and Vicinity.

An inventory of all materials and supplies connected with the plumbing and steamfitting trades in the Cleveland district is now being made by a sub-committee on the supply and demand of building materials representing the general committee appointed by a joint meeting of all real estate and building interests to make a survey of the building situation, generally. Plumbing and heating supplies are only one of the branches of the inventory undertaken by the sub-committee which is seeking to give a report of all materials available in all lines, including brick, stone, cement, lime, sand, lumber, glass, etc. The chairman of the sub-committee in charge of the work is W. T. Rossiter, manager of the Cleveland Builders' Supply Co. Among other work undertaken by the general committee is a trip to Washington to plead for better traffic service on builders' supplies. All interests have combined in an attempt to keep the building industry on its feet in the Cleveland district during the war.

The Building Trades Employers' Association, which is associated with the Cleveland Builders' Exchange, has begun a campaign for the preservation of industrial peace in the Cleveland building trades for the duration of the war, principally as a measure of mutual defense for the employer as well as the employe. The building industry

FOUNTAIN FAUCETS



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Hot water faucet without bubbler, furnished to match. Sink or basin types. Design heavy and rich. Construction thoroughly dependable and guaranteed.

Try installing a few when business is quiet and sell a hot water faucet to match, when you go back to see how people like them.

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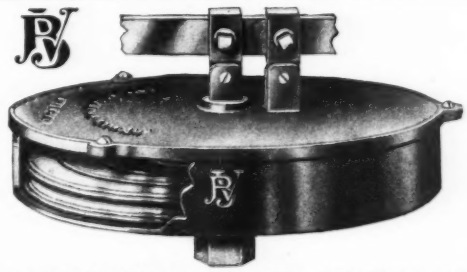

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"A Superior Line"
Bottum Valve Co., 213 Schiller St., Chicago, Ill.
Send for Our Catalogue

Williams "Vulcan" Chain Pipe Vises
are Powerful but not Destructive

Unbreakable
Broadly Adjustable
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Three sizes, accommodating ⅛ to 8-inch pipe. Holds all records for service and the "Grand Prize" for excellence.

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Floor and Ceiling Plates

Substantially made of heavy stamped steel. May be cut to fit any conditions. Adjustable. Unbreakable.

Hinge and catch new in construction and invisible when plate is closed.

Nickeled on copper. Highly polished. Sizes, ⅛-in. to 3-in.

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ROOF FLASHING

Perfectly adjustable to any pitch from 50% to flat. Highest quality material. Highest quality of workmanship.

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Tank Fittings of Quality

1856 **"McSHANE"** 1917

The ORIGINAL Compound Lever Ball Cock, Elevated, Low-Down, Top and Bottom Supply. Tank Levers and Valves.

McSHANE BELL FOUNDRY CO.
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FOR lasting quality and true capacity use "KOVEN" Pure Iron, Double Row Riveted, Galvanized Range Boilers, or NACO Galvanized Range Boilers made of open hearth steel. These boilers may be bought of jobbers everywhere.

L. O. KOVEN & BRO.
50 CLIFF STREET NEW YORK

is already so seriously hampered in many directions by the war that a serious labor difficulty might be disastrous for both sides. The industry as a whole has not yet recovered from the effects of the three months' controversy of a year ago.

Negotiations will be undertaken to promote a feeling of frankness and confidence between the master and journeyman plumbers and steam fitters, among the other trades. Walter Klie, who has been at times president both of the Master Steamfitters' Association of Cleveland, and the Cleveland Master Plumbers' Association, has been elected to the board of directors of the Building Trades Employers' Association.

Melvin Jones, 1175 Lakeview Road, has secured the heating contract on an $18,000 residence at Cleveland Heights, for J. W. S. Webb.

Minnesota

St. Paul and Vicinity.

Fred Dunkel has taken out several permits for plumbing work on residences, nine of them being those of Mr. Bush at 1660 Wesseley Street; Christ Oberg, Blair and Albert Streets; Bert Eidno, 1431 Hythe Street; S. Skygane, 985 Scheffer Street; M. Leslie, 12 North Lexington Avenue; Mr. Wickert, Roblyn Avenue and Dewey Avenue; John Lundquist, Sargent Street and Saratoga Avenue; T. D. Lane, 1118 Lincoln Avenue, and Dr. McCarthy, 631 North Snelling Avenue.

Charles Lundstrom will install the plumbing work in V. Sandell's residence at 311 Sydney Street.

Carl Dahlby will install the plumbing in the frame house of the Home Building Co., at Ivy and Cascade Streets, and in another residence the same concern is erecting at 1800 Jefferson Street.

E. T. Kolar will install modern plumbing in two new frame dwellings.

The J. P. Adamson Co. has secured the contracts for the installation of modern plumbing in five new residences.

Other Cities in the State.

The Clefton Co., of Owatonna, has sold its plumbing and heating business to Arthur L. Doyle, of the plumbing firm of Doyle Bros., of St. Paul, and will hereafter confine its efforts to its large acetylene generator business. The plumbing and heating business of the Clefton Co. was started 27 years ago by C. J. Clefton, who is still connected with the company in the capacity of vice-president. In 1905 a partnership was formed between C. J. Clefton and Guy J. Clefton, who is now president and treasurer of the company, which was incorporated in 1910. In 1911 the Clefton Company became interested in the manufacture of acetylene generators, and this part of the business grew to such proportions that it became necessary to give it the undivided attention of the company's management. The plumbing and heating business and stock was consequently sold to Mr. Doyle, who will continue the business in the Clefton Building and will make his home in Owatonna, although he will retain his interest in the Doyle firm at St. Paul. The Doyle family, by the way, occupies a conspicuous position in the plumbing field, all five brothers being engaged in the trade, as follows: Doyle Bros. in St. Paul, J. H. Doyle in Red Wing, F. J. Doyle in Albert Lea, and Arthur L. Doyle in Owatonna. The Clefton Co. has installed many large plumbing and heating systems in Owatonna and vicinity, and it was with reluctance that the Cleftons retired from this field.

Oklahoma

James J. Joyce, of Tulsa, popularly known as "The Plumber," has been awarded contracts to install plumbing and heating systems in a 12-apartment building and in two four-apartment buildings, which are to be built in Tulsa this spring. He also has on his books the plumbing and heating contracts for two six-apartment buildings now under construction in that city.

The Muskogee Plumbing Co., of 112 South Fourth Street, Muskogee, maintains a service car, the interior of which is arranged to carry all the tools and repair parts needed on almost any repair job, no matter how

The Service Car of the Muskogee Plumbing Co., Muskogee, Okla.

serious the emergency may be. The gentlemen in the picture, from left to right are: Charles Dabney and Robert Wright, both members of the company.

Oregon

Houghtaling & Dugan, of the Henry Building, and E. E. McClaren, of the Lumber Exchange Building, Portland, have become associate architects in the preparation of plans for the completion of the Klamath Falls Court House, estimated to cost $200,000. Plans will be ready in about two weeks, it is expected.

Williams & Beggs, of Portland, have been awarded the contract on the plumbing system in the Lumbermen's Building, which is being remodeled by the State Bank.

The following bids were received by City Purchasing Agent Kellaher, Portland, on the plumbing and heating systems for the proposed detention home to be constructed by the city of Portland: Plumbing: Sturges & Sturges, $2,682; Coffey Plumbing Co., $3,350; Williams & Beggs, $2,700; W. S. Fleming, $2,859; Rushlight & Hastorf, $3,204; E. A. Bohren, $2,862; E. Ruedy, $2,695; De Temple Co., $2,926. Heating: Sturges & Sturges, $2,593; Rushlight & Hastorf, $3,696; E. A. Bohren, $2,661; De Temple Co., $2,992; W. A. Bunce, $2,450. Fox & Co. submitted a bid of $5,862 for both plumbing and heating. All were Portland bidders.

A. A. Bellman & Son, of Klamath Falls, who is to erect six four and five-room cottages on White Avenue, in the immediate future, will soon ask for proposals.

R. H. Thomas, school clerk, Portland, is receiving bids for heating, ventilating and plumbing in the Hawthorne-Buckman School.

Economical Heating—A sufficient reason why you should install
PIERCE DOWN DRAFT HEATING BOILERS
For Steam, Water, Vapor, Vacuum, Heating

There are other reasons, too:
1. Magazine Feed.
2. Down Draft.
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4. 25% Fuel Expense Saved.
5. 50% Less Attention.
6. All Cast Iron.

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Eagle All Lead Roof Flange

LEAD PIPE
Length, 6 inches
Diameter, 4½ inches
SIZE OF APRON
15 inches Square
Made in Angles, 45 deg., 22½ deg. and Straight.

No Caulking To Be Done
Joints Lead-burned — No Solder Used
Flexible Adjustable Economical
Write for Circular and Prices.
Manufactured only by
The Eagle-Picher Lead Co.
CINCINNATI, OHIO

Use Only the
ORIGINAL
Double Drainage Drains

The Name Protects You

Look for "JOSAM" on Every Drain

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SANITARY PLUMBING FIXTURES
PATENTED
DUOJET

A line representing the most advanced ideas in Sanitation, Economy of Operation and Ease of Installations.
Duojet Closets—Flushing Valves—Urinals—Drinking Fountains—Self-Closing Cocks—Liquid Soap Fixtures, Etc.
Manufactured and Sold Exclusively by
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TRADE MARK SIGNET REG. U.S. PAT. OFF.

No More Back Water

where the SIGNET Drain is used.

Keeps basement dry, clean and sanitary. A positive safeguard, either wet or dry, against sewer gas and water.

Brass working parts submerged—works automatically by gravity.

Always works. Always satisfactory.

Write for literature.

CRAMPTON-FARLEY BRASS CO.
KANSAS CITY, MO.

Too Much Coal !

It takes too much coal to make steam in a boiler that's coated with dirt, scale, and sludge.

Old Dan Boiler Compound

Will clean boilers easily and quickly. No effort on your part—just profit. Ask

Lang Chemical Co., Detroit
Sold by all branches of
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"LYROCO"

Low Pressure Direct Return Trap

For all types of

Steam Heating Systems

Eliminates Air, Promotes Circulation, Saves Fuel

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Our Booklet on modulated and Vapor heating is full of instructive matter. It also illustrates and describes our specialties. Send for your copy.

Haynes Selling Company
1711 Sansom St. Philadelphia, Pa.

HEATING GREENHOUSES.

(Continued from Page 371.)

For steam at 20 pounds pressure (260 degrees) the expansion will be approximately 2 inches per 100 ft.

Common methods of providing for the expansion of horizontal coils not exceeding 100 feet in length, in the case of low-pressure steam and hot-water heating, is shown in Fig. 3, which represents the return end of such a coil.

The length of the offsets, "A. B.," may be as follows for different coil lengths:

Length of Coil	Length of Offset ("AB")
40 feet	10 inches
60 feet	12 inches
80 feet	14 inches
100 feet	16 inches

For soils over 100 feet in length, the connections shown in Figs. 4 and 5 are recommended, in which the offsets "C. D." may be as given below:

Length of Coil	Length of Offset ("CD")
150 feet	24 inches
200 feet	36 inches
250 feet	48 inches
300 feet	54 inches
350 feet	60 inches
400 feet	66 inches

If the return main, with which the coil connects, is also flexible, so as to take up some of the expansion, the offsets, C D, may be shortened somewhat, if for any reason it is desirable to do so.

(To be Continued.)

THE BIOGRAPHY OF A SANITARY ENGINEER WHO BECAME A SENATOR.

(Continued from Page 378.)

ing from the salvos of applause that followed his speeches. The city was plastered with campaign posters of him.

When the election returns came in, Gus or rather G. Cooke, learned that he had been elected by a big plurality. Through the daily press he thanked those who had supported him. He said he would consolidate sanitary engineering with sanitary politics, and that the people could rest assured that he would never betray their trust.

Senator Jackson made a cleancut record as a legislator. The eloquence of his addresses were frequently heard in the state senate. He was something of an iconoclast. At least the political parasites thought so—those who had been gorging themselves at the public crib for years and at the expense of the tax payers. He succeeded in stopping some bad leaks in the state funds. He was no grafter. He played politics square.

Puts Through Plumbing Code.

Senator Jackson covered himself with glory particularly in his fight to put through a sanitary code for the state. With the co-operation of the master plumbers he championed the bill and succeeded in carrying it to victory.

He used his influence in favor of public comfort stations, bath houses, and playgrounds, throughout the state. This gave him a "stand-in" with the club women who had been pushing the proposition for several years. He spoke at their meetings. They agreed among themselves that he was "such a grand man," so deferential to the ladies, and why shouldn't they always vote for him. With the co-operation of the senator, the city council was persuaded to appropriate the cash for the public conveniences mentioned.

Through his political prestige he made friends who "belonged" socially, and financially. Knowing these people, was a business asset which figured in plumbing contracts awarded to the Jackson Sanitary Engineering Co. The concern in-

stalled plumbing systems in high-class residences, schools and manufacturing plants.

The ladies of the local "four-hundred" began to feel that the senator was eligible for their drawing rooms. As leading club women, they appreciated his services in behalf of playgrounds, public baths and comfort stations. Besides he looked Chesterfieldian in evening clothes, so why shouldn't they let down the social bars? If he became Governor some day, they would have to receive him anyway, so why procrastinate about recognizing the social worth of this new Napoleon of politics who was developing in Yonkersville. Why snub one who might grow into a man of destiny?

Senator Jackson gained the passport—the entry into the close corporation. He had no frenzied ambition to shine as a social lion. He did not crave the luster of leading cotillions. He enjoyed dancing and could sway into the full rhythm of dance in the gay radiance of the ball room. In his younger days as a sanitary engineer, he had often pirouetted at balls given at conventions of the trade. He had a double motive in entering the luxurious precincts of the elite. Both recreation and business were his aims. Social prestige he saw was a business asset; also a political one.

Jackson had made money in the plumbing business. His establishment was one of the attractions of Yonkersville. It was operated upon an efficiency basis with a live accounting and estimating department. The business grew as the result of fearless initiative and the constant exercise of his mentality—plus ideas gleaned from the trade papers.

"All plumbers cannot become senators," said he in reviewing his career, "but there are many bright men in the trade, who have the makings of senators and who could serve their communities in politics, but they won't assert their individualities either politically or in business. They let the other fellow do it and then they wonder how he managed to arrive, and by what divine right he sits enthroned on the pedestal of success. They marvel at the domineering influence of the grocer, who was elected mayor and who was indexed by some people as just an ordinary 'dub.'

"It is true that the number of master plumbers who are elected to public office is increasing. If more of them went into politics in conjunction with their business, the realm political would be more sanitary. We need sanitary politics. Men of the trade shoulld realize fully that this is an age of intense initiative. Big business realizes it, and is putting close to 100 per cent steam into its efficiency, in order that the front line trenches on the firing line of competitive business may not be captured. The smaller business men if they would arrive must also put greater steam into their methods —plus imagination for developing business if they really are anxious to get the coin."

LEGAL QUESTIONNAIRE

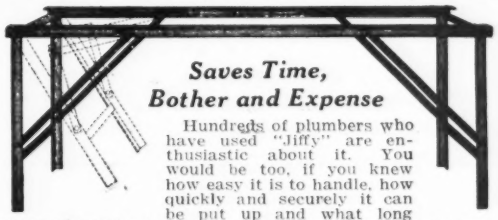
(Continued from Page 375.)

entitled you to stop work altogether unless you should be paid.

The answer to this last possibility depends much on the terms of the written contract which you have. It is not every failure of the other man to live up to his contract, which entitles you to stop work and make a claim for breach of contract. The courts have a way, in some cases, of saying that you agreed to do a certain thing, and that your agreement does not permit you to stop work, if the other fellow does not do certain things.

If your contract shows the proper intention on this point, it is possible that in addition to recovering for the roughing in, you would also be entitled to additional damages because of the breach of the entire contract.

The "JIFFY" Collapsible Laundry Tray Frame



Saves Time, Bother and Expense

Hundreds of plumbers who have used "Jiffy" are enthusiastic about it. You would be too, if you knew how easy it is to handle, how quickly and securely it can be put up and what long years of service it will give. Made of heavy angle iron. Braces of heavy steel, coated with durable black paint. It's a money maker for you. Go see the "Jiffy" at your jobber.

THE FORD DONLEY CO., 1940 East 117th St., Cleveland, Ohio

TRADE H MARK

THE "DIAMOND H" TRADE MARK IS A GUARANTEE OF QUALITY.

LOOK FOR IT ON ALL PLUMBING BRASS GOODS

ATTRACTIVE PRICES :: IMMEDIATE SHIPMENTS
WRITE FOR A CATALOG.

THE HAYDENVILLE COMPANY
HAYDENVILLE, MASS.
Since 1845

NIEDECKEN MIXER

For
Shower
Lavatory
Bath
Sink
Etc.

Write for Bulletin D-10-X

HOFFMANN & BILLINGS MFG. CO.
MILWAUKEE

TRY BLUE SEAL AT OUR EXPENSE

This liberal offer is for plumbers who have never used **BLUE SEAL**. It gives an opportunity to try at our expense the original Money Back Drain Pipe Solvent.

Cut out this advertisement, mail it direct to us with your own address—and your **jobber's**. We will then send you, transportation charges prepaid, six one dollar cans (2 lbs.) **BLUE SEAL**

DRAIN PIPE SOLVENT

Use these six cans according to directions to clear waste and drain pipe stoppages. If the Solvent does all we claim for it you are to send us $3.60 (special price for plumbers) within ninety days. If not the trial costs you nothing.

10,000 plumbers now use **Blue Seal.** Over 300 jobbers stock, sell and recommend it. If you haven't used it, this is your opportunity.

BLUE SEAL CHEMICAL CO.
417 E. 16th St. New York

DESOLVO Clears Clogged Pipes

The Original and Only pipe cleaner that can be used successfully with Cold water.
Used by progressive plumbers everywhere.
Order from your jobber.

The Chamberlain Company
Manufacturing Chemists Pittsburgh, Pa.
K-K Cleans closet bowls "the sanitary way."

Hause Pipe Joint Cement

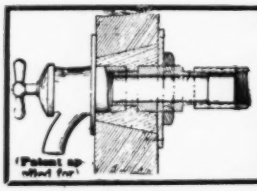
sets like gum, allows no leaks. Manufactured in both ready mixed and powdered form. Powdered form can be mixed with any grade of cheap machine oil.
Ask your Jobber for prices or write us direct.

The Chas. F. Hause Mfg. Co., Inc.
Omaha, Nebraska

Happy Is the Man Who Uses the Martin Portable Vise Stand and Pipe Bender

because he knows he can carry it anywhere. All he has to do is to insert the legs and go to work.
Stands securely anywhere. Equipped with chain or hinged vise. Bender has capacity of ⅛ inch to ¾ inch. Vise capacity, 2 inches. (Patented Jan. 26, 1915.)
Write to-day for special 10-day free trial offer.

H. P. Martin & Sons, 621 E. Second St., Owensboro, Ky.



THE LILGER LAUNDRY BIBB CONNECTION

is a practical device for laundry tray improvements. Easily attached. Holds bibb in place by nut and washer arrangement. Leak-proof. Saves time and money.
Order from your jobber. Write us for circular.

THE LILGER COMPANY
1246 W. 72nd Place, Chicago, Ill.

WROUGHT IRON STRAPS

Scientific construction makes these straps stronger, lighter, better in appearance.—MORE PIECES TO THE POUND—Consequently lower in price.

Write for Prices

BERGER BROS. CO.
229-231-237 Arch Street
PHILADELPHIA

Adjustable Vent Caps

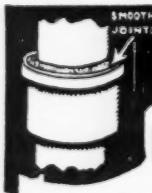
Ours Fit Standard or Extra Heavy Soil Pipe
Headquarters for Iron Closet Bends, Boiler Stands, Cesspools, Sink Brackets, Laundry Tub Legs and other IRON Plumbers' Specialties

Wolverine Foundry Co., Detroit, Mich.

SMOOTH-ON JOINTS

TRADE MARK REG. U.S. PAT. OFF.

SMOOTH-ON



IRON CEMENT No. 5

For making hub joints on cast iron soil pipes, gas and water mains.

EASY TO APPLY
Difficult joints quickly and easily made.
For sale by supply houses.
Send for our illustrated instruction book.

SMOOTH-ON MFG. CO., 570 Communipaw Ave. JERSEY CITY, N. J
Chicago Office, 221 N. Jefferson St.

DOMESTIC HOT WATER CONNECTIONS.

(Continued from Page 368.)

After reaching the tank the return line drops, the return passes through a check valve and then up into the boiler. The air venting is carried out the same as shown in Fig. 52 and operates in a similar manner; the circulation will be fully as good under equal conditions.

The third arrangement consists of putting both supply and return pipes under the floor and the circulation in such a case will not be as good as that obtained in either one of the two previous methods. In fact, in order to maintain any circulation at all, it is necessary to carry the supply line up from the tank, as shown in Fig. 54, to as high a point as possible, providing it there with an air trap and then drop back to the main below the floor. All pipes must grade up toward the riser leading to the air trap in order to permit all the air to ascend and collect at the trap. As the air trap must be relieved from time to time by opening the pet cock and as the circulation under any circumstances will not be very good, this method of circulation should be used only when the better schemes already shown are impossible to install.

Two Tanks and One Source—Fixtures in the Same Level.

Where it is necessary to have a large supply of hot water stored up for periodic use as is often desirable, two storage tanks of standard size are sometimes utilized in place of one of larger capacity. For such an installation the piping must be arranged so that the two tanks will act as one, both in being heated by the water back and in circulating through the lines to the fixtures.

Fig. 55 shows two tanks piped up so as to supply *two* circulation loops furnishing water to fixtures located on either side of the tanks; if the fixtures were located all on one side of course one loop could be omitted and the other would then do the entire work. In this case connections for the single loop would remain the same as shown for either of the two. It will be noted on this drawing that the hot water back draws the cold water from each of the two tanks at the bottom through the return header, and the hot water from the water back is piped into the side connection of the two tanks. The hot water supply is then taken from the top of each tank and is connected together into a common header, from which one or more loops are taken, these being pitched up to the high point, where a fixture connection furnishes the required air relief. The return comes back along the ceiling (being pitched in the opposite direction) and is connected into the cold water header leading to the water back through a check valve in a manner similar to that shown in Fig. 53. There is no reason, however, why this return could not be dropped under the floor, as shown in Fig. 52, or why the water could not be circulated entirely beneath the floor, as shown in Fig. 54, provided the necessary vertical riser and return line is installed. The cold water supply may be connected to each tank by means of the customary tube or may be connected into the return header as shown in Fig. 55. The whole secret of the double tank piping lies in getting the two tanks to work as a unit, and this is accomplished by the header connecting the top of the tanks together and the return header connecting the bottom of the tanks together with the flow connection from the water back, so that hot water is supplied proportionately to each tank.

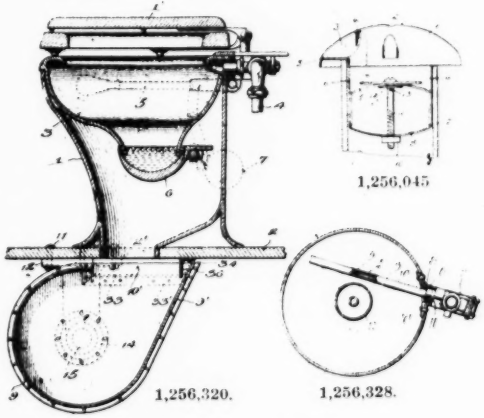
(To be Continued.)

Waterbury, Conn.—John F. McGough, a master plumber, has filed a petition in bankruptcy.

Patents

Plumbing Department.

1,256,320. Closet Attachment. Joseph Fletcher Holmes, Baltimore, Md. A device adapted to be positioned beneath a closet bowl comprising a receptacle having an opening therein adapted to be placed in communication with said bowl to receive the refuse from said bowl, said receptacle being composed of metal the body part thereof having outturned flanges to which the sides are secured, stub axles carried by said sides, levers loosely mounted on one of said stub axles, brackets having bearing portions therein receiving said stub axles to support the receptacle, buffers mounted upon the upper portion of the receptacle and projecting beyond the edges thereof, a plurality of separated springs connected with one of said brackets and an adjustable block attached to the receptacle, the adjacent ends of said springs being fastened to the levers loosely mounted upon one of the stub axles, the said springs normally retaining the receptacle in a position to receive the refuse from the bowl, and means connected with said receptacle and adapted to be operated at a point remotely of the same for shifting the receptacle to discharge the contents through the opening therein.



1,256,045

1,256,320. 1,256,328.

1,256,045. Vent-Cap for Soil-Pipes. Joseph M. Schrems, Saginaw, Mich. In a soil pipe, the combination of a pressed metal cap having diametrically opposite pockets formed therein, a pair of downwardly extending flexible arms secured at their upper ends to the bottoms of said pockets, a downwardly bowed flexible cross brace secured to the lower ends of said arms, an upwardly bowed flexible cross brace secured to said arms intermediate their length, a threaded boss carried by said lower cross brace, a threaded bolt passing loosely through the upper cross brace and threaded into said boss, an upper and a lower washer on said bolt, said upper washer of large diameter, said cap formed with a central aperture located above the head of said bolt, for the purposes set forth.

1,256,328. Water-Heater. George W. Kite, Jr., Chicago, Ill. A water heater having a cylindrical boiler or tank and a flue located centrally within it, in combination with a thermostat having a thermal member located in a chord of an arc of the circle described by the surface of

FOR SHIPS USE
TO GOVERNMENT SPECIFICATION
WATER HEATERS & SHOWERS
GOETZ BRASS COMPANY
630 N. FRANKLIN ST. CHICAGO, ILLINOIS

Phillips High Speed Drills
For drilling all size holes, ¼ to 1½" in concrete, brick and stone, in walls, floors and ceilings for expansion bolts, pipe hangers, etc. Write for folder. Manufactured by
Daugherty-Smith-Phillips Co., 500 W. Division St., Chicago, Ill.

Look For
NATIONAL
The Name

EQUALLY NECESSARY
¶ The user of small pipe often requires a ductile pipe. Although an example of the unusual ductility of "NATIONAL" Pipe is demonstrated in last week's issue (page 78) by an expansion loop of exceptional size, yet it is no less interesting to those who require ductility in pipe of small diameter.
¶ If by chance you missed the announcement—"NATIONAL" PIPE FOR EXPANSION LOOPS—turn to it now.
NATIONAL TUBE COMPANY, PITTSBURGH, PA.

"FEMCO" Specialties
A standard line of Plumbers' Brass Supplies with an established reputation for
Quality Service Originality
WRITE FOR PRICES AND DETAILS
Frost Manufacturing Co. **Kenosha, Wis.**

F. & W. Electric House Pumps
are of large capacity, economical, silent in operation, and easily installed. *Send today for bulletin.*
FLINT & WALLING MFG. CO. KENDALLVILLE, INDIANA

No. 2A Thermostat
MFG. CO. ROBERTSHAW YOUNGWOOD, PA.
The standard for 30-40 gal. boilers, and single coil heaters or equivalent. Has ⅜-in. gas openings.
We Make All Sizes

STANDARD PORTABLE VISE BENCH AND PIPE BENDER
Saves more than its cost on the first job. Set up in a minute without any tools. Always ready. Lasts a lifetime. Thousands in use. Drop us a line and we will mail you names and addresses of thousands of satisfied users.
STANDARD IRON WORKS
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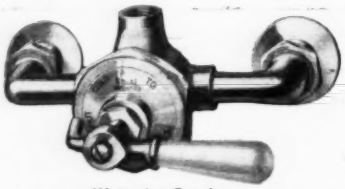
You have some slow-moving machinery or material that should be known to the trade, but must be sold with the minimum expense. Describe it in the Classified Department—4 cents a word per insertion.

ROYAL
Mixing Valve for Showers
Simple in Operation—Few Working Parts.

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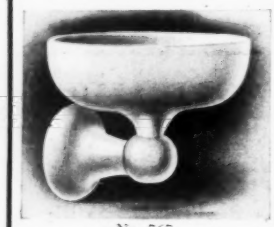
THE ROYAL BRASS MFG. CO. CLEVELAND, OHIO

American Beauty Line
—of—
Pure White Bathroom Fixtures
YES SANITARY IS

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No unsightly screws on face of Post Brackets—a new and novel feature.
Post Brackets only 2½ in. Smallest ever made.
Order Sample
The up-to-date, better kind.
Order from your jobber.
Bay Ridge Specialty Company, Inc.
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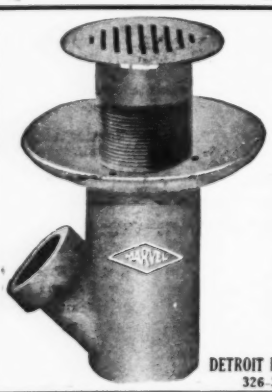

MARVEL
"2 in 1"
Adjustable Shower Trap
embodies the double drainage principle.
Used by most discriminating plumbers. The trap you will prefer after giving it a trial.
Cast iron, black or galvanized. Tapped 2-in. iron pipe.
We make a complete line of the famous MARVEL Traps.
Order from your jobber.
Made by
DETROIT MARVEL BRASS MANUFACTURING CO.
326-332 Rivard Street, Detroit, Mich.

Refrigerator Drain Traps
Oblong Pattern—Removable Strainer
Aluminumized or Galvanized
Tapped for 1¼ inch Iron Pipe

With Spud to Slip 1¼ inch Iron Pipe
Other Styles Listed in Catalog "H"
Wolverine Brass Works
Grand Rapids, Mich. San Francisco, Cal.

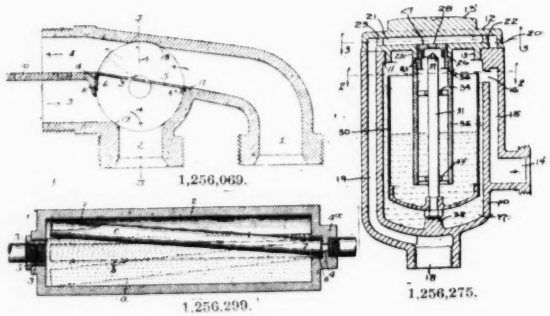
the tank and lying at one side of the central flue one element of said thermal member consisting of a tube, and a hollow spud with which said tube has threaded engagement, the axis of said spud being coincident with the axis of the tube, and the spud having a flange lying against and conforming to the surface of the tank, to which it is secured, and the tank having an opening through which the tube passes.

1,256,285. Solder for Aluminum. John J. Aubertin, Jr., St. Louis, Mo. The herein described solder composed of zinc and tin, the former being in the proportion of two to one, and a relatively small proportion of salammoniac.

Heating Department.

1,256,069. Radiator-Valve Connection. Charles H. Speckman, Philadelphia, Pa. The combination, in a radiator valve, of a casing having supply and discharge passages and a chamber communicating therewith, a partition between said supply and discharge passages, a diaphragm interposed between the supply and discharge passages of the casing, and mounted so as to be free to swing about its axis, and an edge flange on said diaphragm co-operating with the partition to permit of adjustment of said diaphragm so as to provide either a full or a restricted flow through the supply passage of the casing, while permitting a full flow through the discharge passage of the same.

1,256,275. Steam-Trap. Cole Stickle, Indianapolis, Ind. A vacuum valve mechanism for radiators and the like including a vessel having a condensation chamber therein with the upper end open, a top adapted to screw on the upper end of the vessel with an inlet port centrally located in it and an annular chamber in communication with said port, and a discharge passage extending down on the outside of said vessel and discharging below the vessel and with the upper end of said passage in communication with the annular chamber in the top regardless of the angular position of the top, and a float controlled valve for closing the port in the top.

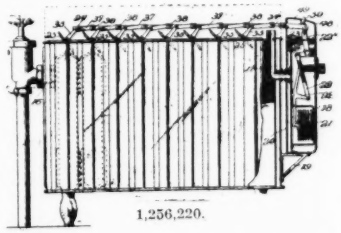

1,256,069.
1,256,299.
1,256,275.

1,256,299. Steam-Trap. Thomas L. Douglass, Beaver Falls, Pa. A steam trap comprising an elongated receptacle having a steam and water inlet and a water outlet, and an unattached elongated combined float and valve member in said receptacle, the longitudinal axis of the member extending lengthwise within the receptacle, said member having one end facing the outlet and arranged to seat over the outlet opening when the float member is in approximately a horizontal plane, and means for causing said member to fulcrum at a point adjacent to the outlet when the water rises above a predetermined level to open the outlet and permit the water to flow therethrough, substantially as described.

1,256,220. Radiator-Casing. Weston M. Fulton, Knoxville, Tenn., assignor to The Fulton Company, Knoxville, Tenn., a Corporation of Maine. A radiator casing com-

posed of built-up sections, damper-supporting plates on said sections, and dampers mounted on said plates, said plates and dampers having edges overlapping to form joints permitting longitudinal variations in the length of the casing without opening the said joints.

1,256,128. Radiator Foot-Rest. John F. Grabill, Flora, Ill., assignor of one-half to Horatio C. Chaffin, Flora, Ill. As an article of manufacture, a foot rest for radiators comprising a foot rest proper, brackets mounted upon the rear face of the foot rest and having laterally extend-



1,256,220.

1,256,128.

ing slotted members, the outer ends of the brackets being bifurcated to fit against and receive the coils of a radiator, bolts passing through the said slots and holding the brackets to the foot rest and permitting the brackets to be longitudinally shifted along the foot rest, and means extending from the foot rest adapted to clamp against the radiator and hold the foot rest in place.

PREVENTING BLOW HOLES IN YELLOW BRASS.

Charcoal is used in connection with the melting of copper and its alloys because of its reducing action on the oxide of copper. This oxide forms on the surface of the metal after it is melted and would be absorbed by the copper if charcoal were not used. The charcoal also combines with the oxygen in the atmosphere in the crucible, and by eliminating the oxygen, protects the metal from the gas. Charcoal, therefore, says The Foundry, prevents blow-holes in castings and this statement may be verified easily by making experiments without the use of this material.

However, in some instances, it is not advisable to employ charcoal. Therefore, another material must be substituted for it and common bottle glass, with crushed anthracite coal, will be found to be satisfactory. Also, a small amount of salt should be added with the cold charge of copper. The glass and coal also should be used, the purpose being to provide a slag that will melt with the copper and will cover it to exclude the air and to prevent gas absorption.

A yellow brass, high in zinc and lead, is a difficult alloy to cast successfully in sand. The mold should be well-vented and secured and the lip of the pot should be held close to the sprue head. Furthermore, all dirt should be skimmed back to expose the clean metal and then the crucible should be tilted to fill the head almost instantly. Furthermore, the sprue head should be kept full of metal until the mold has been poured.

An alloy consisting of 95 per cent zinc and 5 per cent aluminum should be used as a deoxidizer in the proportion of 0.5 per cent to the charge and if no difference in the castings is noted, an increase of 4 ounces in this deoxidizer should be made and this should be continued until a good casting mixture is obtained.

Galloway & Geiss, 1433 Main Street, Kansas City, Mo., have the contract to install the plumbing in a store and office building now under construction in that city. This firm has just completed the work of installing the plumbing in a new $100,000 high school building at Joplin.

Dole PACKLESS GRADUATED RADIATOR VALVE

Embodies a **new** and **exclusive** DOLE principle by which you can have every degree of opening required in vacuum or vapor steam heating.

This Adjustment is easily made while the steam is on.

Nothing like it on the market.

Furnished with the DOLE **without extra cost.**

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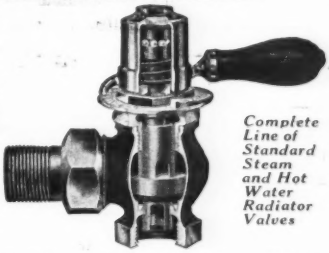

Complete Line of Standard Steam and Hot Water Radiator Valves

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PAUL Systems give the Best Service

Private Water Systems
Private Electric Lighting Systems
Electric and Power Pumps
Compressors and Garage Air Service Systems

For Country Homes, City Residences, Country Clubs, Summer Cottages, Factories and Private and Public Institutions, For the Factory or Private or Public Garage

FORT WAYNE ENGINEERING & MFG. CO.
MAIN OFFICE AND FACTORY
Dept. 14 Fort Wayne, Indiana.

Government Type Non-Siphoning Trap

Made by

Sanitas Manufacturing Co.
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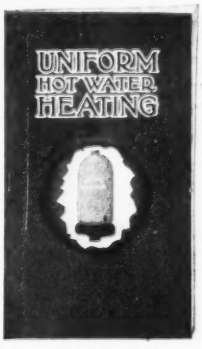

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Ball Seal Generator

for Hot Water Heating.

This generator increases circulation and radiation. Prevents sluggish, water-logged conditions. Reduces fuel cost. Operates without noise. No attention needed.

Just what you want for that next job.

The Ball Seal Generator Co.
Easton, Pa.

Classified Advertisements

The charge for advertisements under this heading is $1.00 for 25 words or less, including heading and address; 4 cents each for additional words. To insure insertion, copy and remittance should reach us by Wednesday morning.

Situations Open

WANTED — SALESMAN WHO CAN sell established line of furnaces and boilers in Michigan. Address 2508, care "Domestic Engineering," Chicago. 3-9tf.

WANTED—FOR NEW YORK, BROOKlyn, etc. A heating salesman to sell radiators and boilers on commission to trade already established. Address A-4, 1327 Poplar Street, Philadelphia, Pa. 2-23; 3-2-9

WANTED — A FIRST-CLASS STOCK man for plumbing and steam supply house, Metropolitan district. One who can get out orders and wait on customers, etc. State age and experience. First-class reference required. Address 2509, care "Domestic Engineering," Chicago. 3-9

WANTED — SHEET METAL WORKER with knowledge of plumbing and heating, in eastern Utah. Steady position for the right man who will make himself generally useful. Address 2505, care "Domestic Engineering," Chicago. 3-2;9

WANTED — PLUMBERS FOR SUNNY South. Three first-class plumbers and one combination plumber and steamfitter to go to best city in sunny Tennessee. Ideal climate and finest locality in the country to raise a family. Open shop and no strikes. Steady work the year 'round. Wages, $5 per day, eight hours. Address 2510, care "Domestic Engineering," Chicago. 3-9; 16; 23

WANTED—A TRAVELING SALESMAN for the metropolitan district of New York. Competent, capable and familiar with the plumbing and steam trade. One who can sell goods and has some idea of figuring. State age and experience. Reference must be first class. Correspondence strictly confidential. Address 2507, care "Domestic Engineering," Chicago. 3-9

For Sale.

FOR SALE—PLUMBING AND HEATING business, best location, good stock and equipment; also building if desired. D. I. Flatt, 1014 Colorado Ave., Colorado Springs, Colo. 3-9

Fittings For Sale

WIRE OR WRITE US AT ONCE IF YOU need odd sized galvanized drainage fittings or galvanized cast iron fittings, screwed. This order is subject to prior sale. George H. Soffel Co., 425 Second Avenue, Pittsburgh, Pa. tf

Miscellaneous.

WE BUY IRON PIPE COUPLINGS—spot cash. How many, either pounds or pieces have you of various sizes? Gwilliam Supply Co., 615 Christian Street, Philadelphia, Pa. 10-6,tf

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Government Proposals

TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C., February 25, 1918.—Sealed proposals will be opened in this office at 3 p. m., March 26, 1918, for a pumping plant in the United States post office, courthouse, and customhouse, Biloxi, Miss., in accordance with specifications, copies of which may be had at this office or at the office of the custodian, Biloxi, Miss., in the discretion of the Supervising Architect. James A. Wetmore, Acting Supervising Architect. 3-9; 16

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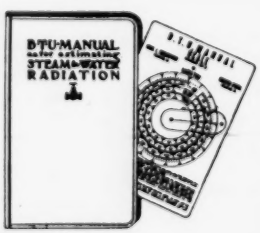

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